



AETC Environmental Safety and Occupational Health

**Technology Needs
Planning, Programming, & Budgeting**

Management Guide

February 2000

**HQ AETC/LG-EM
Randolph AFB TX
DSN: 487-6850**

This guide is intended to complement applicable AFIs, AFMANs, and corresponding supplement; in the event of discrepancy, applicable AFIs take precedence.

ACKNOWLEDGEMENTS

The Air Education and Training Command (AETC) Environmental, Safety, and Occupational Health (ESOH) Technology Needs Planning, Programming, & Budgeting (PP&B) Guide was developed at HQ AETC Randolph AFB, TX. The PP&B was produced by the following individuals in the HQ AETC Directorate of Logistics Environmental Management office:

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The ESOH Technical Needs PP&B is a living document – it will be updated to reflect changes in the ESOH, planning, and budgeting arenas. Your comments would be greatly appreciated!
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This document is located on the AF ESOH TPIPT Home Page:
<http://xre22brooks.af.mil/hscxre/xrehome.htm>, and the HQ AETC/LG-EM Home Page:
<http://lg.aetc.af.mil/maint/enviro/homepage.htm>

**Environmental Safety and Occupational Health
Technical Need Planning, Programming and Budgeting
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Chapter 1

General Guidance

Section 1.1 Introduction

With the issuance of this management guide, the 311th Human Systems Wing, Directorate of Development Planning (311 HSW/XPE) and Headquarters Air Education and Training Command, Directorate of Logistics Environmental Management (NQ AETC/LG-EM) have taken a significant step in the Technical Planning Integrated Product Team (TPIPT) process. 311 HSW/XPE has moved the Environmental, Safety, and Occupational Health (ESOH) TPIPT process from need identification, prioritization, and analysis to the solution development phase. At the same time, AETC has formalized and codified this process at the installation level and has formalized the MAJCOM process for validating ESOH needs and moving these needs to solutions. This management guide marries both efforts and addresses the follow-on processing of Environmental, Safety, and Occupational Health needs at AETC and, more importantly, their solution implementation.

In the last three years, the TPIPT process has identified solution concepts for nearly all of the high and medium priority Air Force ESOH needs from the over 400 technology needs collected, prioritized and analyzed. This guide focuses on the AETC actions necessary to implement the recommended and accepted solutions identified by the TPIPT process. Admittedly, this program has an AETC flavor to it, but it is felt that with some minor variations, the processes and procedures discussed can be applied to the other Air Force MAJCOMs. Specifically, the guide addresses the processes to obtain the resource support at AETC for the accepted solution sets.

The key to AETC resource support lies with effective long-range planning and use of the Planning, Programming, and Budgeting System (PPBS). These two processes are integral parts to each other. Under the "new" strategic planning process, the Air Force is re-emphasizing the close link between long-range planning and the Program Objective Memorandum (POM) in the PPBS. AETC and Air Staff functional areas use Mission Area Plans (MAPs) and Mission Support Plans (MSPs) to identify their long-range planning requirements. In these plans, deficiencies are identified that impact the various AETC mission areas or Air Staff functional areas. The projected solutions to correct these deficiencies are also included in these plans. Mission area and mission support plans represent the prioritized and integrated approach to meet Air Force mission objectives. Under the strategic planning vision, MAPs and MSPs become the drivers for the Air Force Planning and Programming Guidance (APPG), which result in Air Force and MAJCOM POMs and budgets. The Planning, Programming, and Budgeting System also includes the Financial Planning (FINPLAN) and Budget Execution Review (BER) processes for near term funding requirements not applicable to long-range planning.

There is a clear correlation between Environmental, Safety, and Occupational Health needs/solution concepts developed through the TPIPT process and "deficiencies/solutions" used in Air Force long-range planning (MAPs/MSPs). This guide links ESOH needs with Air Force long-range planning. Once accomplished, this link results in the required resources and support to resolve the identified needs. This guide provides templates and processes for linking Environmental, Safety, and Occupational Health needs to MAPs, MSPs, FINPLAN, and BER processes.

Before getting into the specific activities and processes that integrate the technology needs into the funding cycle(s), let's review the major programs that comprise the process.

Section 1.2 Technology Need Survey (TNS) Overview

1.2.1 Purpose

The Technology Needs Survey (TNS) is used by the Air Force (AF) Environmental, Safety and Occupational Health (ESOH) Technical Planning Integrated Product Team (TPIPT) to identify and collect ESOH needs and deficiencies Air Force wide and prioritize those needs and deficiencies for use in Air Force planning. These needs are processed through a “system” that validates these needs at the installation, MAJCOM, and Air Force levels.

1.2.2 Air Force Vision

The Air Force vision to build the world’s most respected air and space force can be seriously impeded by environmental, safety, and occupational health issues. Early identification of ESOH related issues will reduce cost, minimize mission impact, and increase performance. The Air Force, therefore, must identify and evaluate potential ESOH hazards and costs associated with the development, acquisition, operation, maintenance, and disposal of USAF infrastructure and weapons systems (WS). The Technology Need Survey (TNS) provides an orderly process for accomplishing the identification, prioritization, evaluation, and validation of these environmental, safety, and occupational health needs and deficiencies. The TNS is the first step in the ESOH TPIPT process resulting in integrated solutions to ESOH issues for use in Air Force modernization planning as outlined in AFPD 10-14, *Modernization Planning*, and AFI 10-1401, *Modernization Planning Documentation*

1.2.3 Objective

The TNS process collects and considers needs from the following: (1) operators (e.g. AF installations, logistics centers, MAJCOMs, Air Staff, etc.); (2) mission area team and mission support team approved concepts; and (3) requests from mission area and support teams for environmental, safety, and occupational health assistance in evaluating proposed concepts. All of these groups are interrelated in that needs and their solutions from one group may impact others. MAJCOMs and installations Air Force-wide use the TNS process to identify ESOH infrastructure and weapon system needs.

In addition to needs, the ESOH Technology Need Survey collects Weapon System Hazardous Materials Reduction Prioritization Process (HMRPP) needs as outlined in AFI 32-7086, *Hazardous Material Management*. The HMRPP provides a formalized way for installations to identify weapon system driven hazardous materials (HAZMAT) reduction needs. This enables installations and MAJCOMs priorities to drive weapon system HAZMAT reduction efforts. HMRPP links MAJCOMs, installations, and single managers (who are responsible for modifying AF WSs and have engineering control over weapon systems and maintenance processes) in an integrated process seeking to reduce weapon system related HAZMAT dependence. Installation data collected through the TNS is essential in identifying the weapon system-driven HAZMAT costs and impacts used in the HMRPP.

Section 1.3 Planning, Programming, and Budgeting System (PPBS) Overview

1.3.1 Objective

The objective of the Planning, Programming, and Budgeting System is to obtain the necessary resources, manpower, facilities, weapon systems, and operating funds necessary to overcome the threats against the United States and its interests. The Air Force Corporate Structure (AFCS) is the means through which the Air Force implements the PPBS. The Planning, Programming, and Budgeting System includes an analysis of the threat, establishment of program requirements to fulfill the strategy, and programming and commitment of resources. The goal is to create a balanced program between AF planning's resources needs and AF program's resources availability.

1.3.2 Key Points*

The key points of the PPBS include:

- The Air Force Program is built from the bottom, up
- CINCs, MAJCOMs, DRUs, FOAs, and IPTs advocate programs and new initiatives throughout the process
- The MAJCOMs, DRUs, FOAs, and IPTs are kept in the loop by the program element panels to review the POM, BES, and BR changes during development
- The Air Force uses the AFCS with the Resource Allocation Process (RAP) to integrate all program needs and available resources together, provide an open assessment process, and provide the best set of recommendations to CSAF and SECAF
- The PPBS is an iterative process involving the Services, OSD, CJCS, and the CINCs
- The Future Years Defense Program (FYDP) is an important product of the PPBS and is updated at completion of the POM, the BES, and PB exercises
- Program adjustments occur throughout the process with AFCS review

* Refer to the *Acronyms* and *Glossary* pages in the appendix for expanded explanations.

The PPBS is a cyclic process containing three distinct but interrelated phases.

1.3.3 Planning processes

Planning produces a fiscal forecast, planning guidance, and program guidance. It improves our ability to translate top-down guidance into meaningful plans and requirements. Streamlined planning and assessment documents help prioritize objectives, assess strategies, and provide the link between planning and programming. Our Air Force Strategic Plan (AFSP) helps to guide us in development of a 21st Century AF Program.

1.3.4 Programming processes

Programming creates the Air Force portion of the DoD's Future Years Defense Program (FYDP) by defining and examining alternative forces, weapons, and support systems. It translates the Air Force and Office of the Secretary of Defense (OSD) guidance into the dollars, forces, and manpower of the Air Force program. Initial program costing is established during the programming phase. Through the programming processes, the Air Force and other Military Departments convert planned requirements into the resources needed to provide them. By programming, the Air Force matches available resources

(fiscal, manpower, materiel, legal, etc.) against validated requirements. Planning policies and guidance are addressed and initial program costs are established. The key objective of programming is development of a balanced Air Force program in the form of the Air Force Program Objective Memorandum (POM). In addition, through the programming processes, the Air Force defends its POM during Program Review (PR) and Budget Review (BR) and adjusts the program as a result of these reviews.

1.3.5 Budgeting processes

Budgeting formulates, executes, and controls resource requirements, allocation, and use. The Air Force refines the cost estimate of the Program Objective Memorandum (POM), submits the proposed budget, and participates in Office of the Secretary of Defense's (OSD) review of the proposed Air Force budget before the DoD budget is submitted to Congress. Through the budgeting processes, the Air Force formulates, executes, and controls near-term resource requirements, allocations, and use based on the results of the planning and programming efforts. Budgeting begins with the Investment Budget Review (IBR) and Operational Budget Review (OBR) and continues with the Budget Estimate Submission (BES), and Budget Review (BR). The Air Force lead for budgeting is Deputy Assistant Secretary – Budget (SAF/FMB).

1.3.6 Annual Planning and Programming Guidance

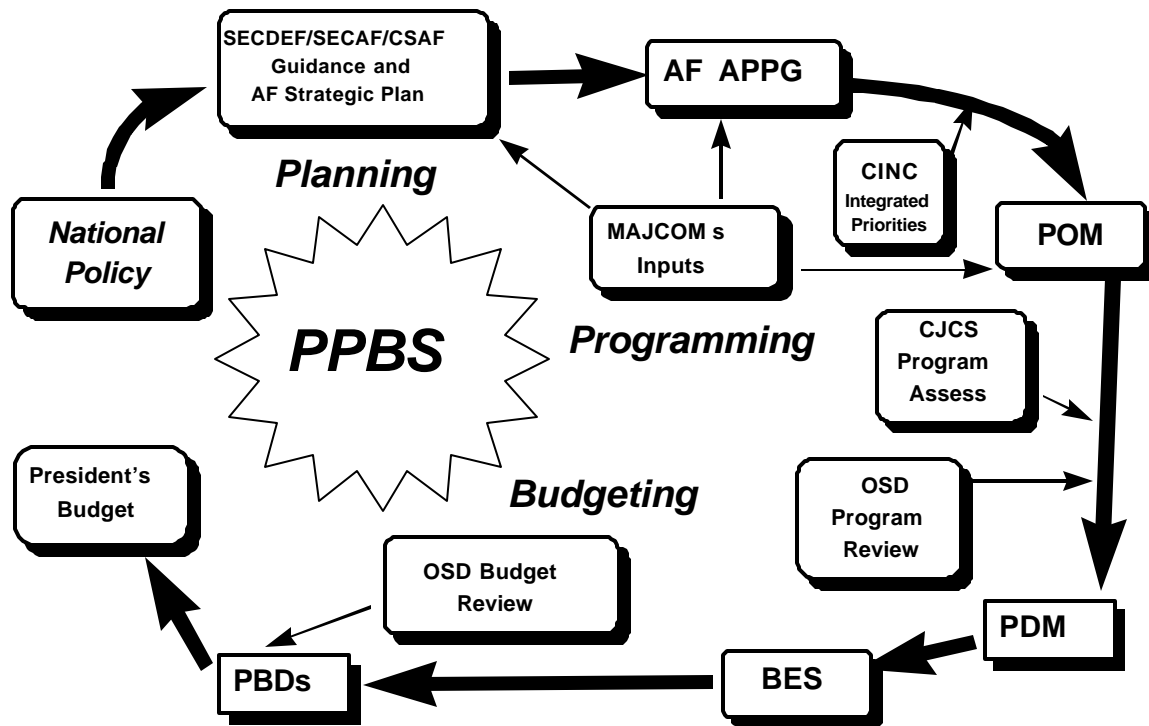
The Annual Planning and Programming Guidance (APPG) links planning to programming. It channels near-and mid-term planning and programming endeavors, as well as long-term program development. The APPG provides Air Force corporate guidance on the readiness and sustainability, force structure, infrastructure, and modernization needs for the upcoming POM submission.

1.3.7 Program Objective Memorandum

The Air Force Program Objective Memorandum identifies total Air Force program requirements for the Future Years Defense Program (FYDP). It is based on the Air Force Strategic Plan (AFSP) and APPG strategic concepts and guidance and includes an assessment of the risk associated with the current and proposed forces and support programs. The Office of the Secretary of Defense provides Fiscal Guidance (FG) in terms of Total Obligation Authority (TOA) derived from presidential decisions about future DoD funding levels as estimated by the Office of Management and Budget (OMB). The Air Force Program Baseline for the POM is always the previous President's Budget (PB) despite that fact that the POM build begins long before the PB is complete. The POM build begins using the previous Budget Estimate Submission as a baseline. Once the PB is available, usually February, the programmers adjust the on-going POM adjustments to reflect the PB baseline. A key objective of POM development is providing requisite capabilities and meeting critical needs within a balanced program weighted by mission and mission support area needs. Balance is essential among mission and mission support areas, between force structure and support, and between current and future capabilities.

Figure 1 below illustrates the overall PPBS process cycle.

Figure 1
Planning, Programming, and Budget System Process



Section 1.4 AETC Long-range Planning Overview

1.4.1 Background

To resolve shortfalls, the Air Force Chief of Staff (CSAF) chartered a Special Assistant to the CSAF for Long-Range Planning, whose role was:

- Develop a coherent, strategic vision of the future (2025) that articulates the contributions of air and space power to joint warfighting -- chart actionable courses to that future
- Institutionalize long range, strategic planning in the AF

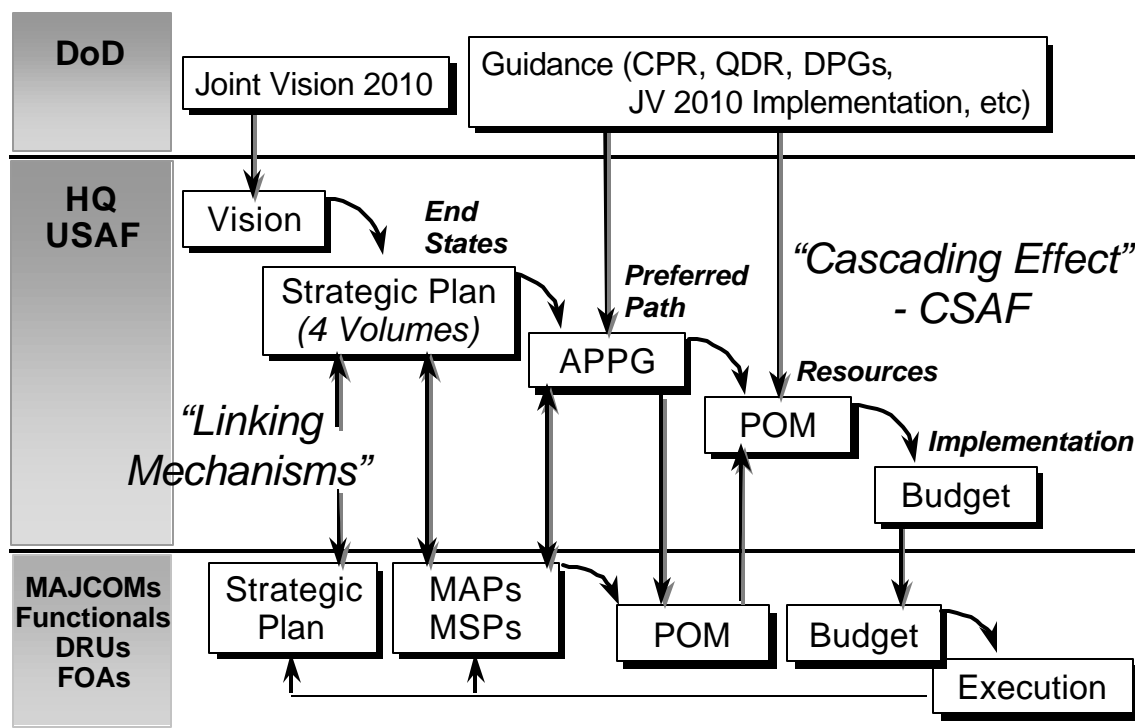
AF/LR had 18 months to do this, ending with CORONA FALL '96, where "Global Engagement" was approved as our vision document and work began on a long-range plan to chart the future course. While working to institutionalize AF/XP processes, CSAF directed the integration of strategic planning, emphasizing common Air Force Task Lists based on Core Competencies . . . leading to the development of the Air Force Strategic Plan.

1.4.2 Purpose

Air Education and Training Command long-range planning is designed to organize the principles of strategic planning around Air Force Core Competencies. The Air Force Vision and Joint Documents drive the context in which planning takes place. From these influences, Air Force Core Competencies are developed to highlight the key contributions the Air Force makes to national security (the formal Core Competencies reside in the Vision). *Figure 2* depicts how Core Competencies must underlie the entire Air Force planning and programming process. The remainder of the chart is the planning/programming cascade chart indicating the key linkages between processes and products

Figure 2
AF/XP's current Planning Concept

AF/XP Planning Process



1.4.3 AF Modernization Planning Process (MPP)

In 1991, the Air Force embarked on a path to modernize the way we organize, train, and equip our forces to accomplish the mission. The Air Force Chief of Staff's vision was a quality Air Force built upon integrated concepts of support capabilities and air power application. The tasking was to develop a plan for the modernization of the Air Force out to the year 2015.

1.4.3.1 The Goal

The goal of the process is an operationally oriented modernization plan that is clearly and logically derived from the nation's security objectives

AFI 10-1401 states: *“Modernization Planning produces documents . . . evaluating Air Force mission areas and functions, pinpointing deficiencies, and showing how the Air Force plans to affordably overcome those deficiencies to achieve the combat capability it needs in the future.”*

1.4.3.2 The Objective

Modernization Planning Process (MPP) is how we are going to get to where we want to be in the future. Within the planning process, Mission Area Assessment (MAA) refines strategy to task, while Mission Needs Analysis (MNA) refines the task to the need, and Mission Solution Analysis (MSA) defines potential solutions. The Mission Area Plan (MAP)/Mission Support Plan (MSP) is the product of the analyses of MAA, MNA, and MSA. Initial planning is done in an unconstrained manner, but since we all must face a limited checkbook, planners eventually face fiscal constraints. Deficiencies and potential solutions are integrated and prioritized across all MAPs and MSPs to determine the best way to modernize the Air Force over the next 25 years. This planning forms the basis for the Program Objective Memorandum, acquisitions and modifications, technology master process, and test and tactics.

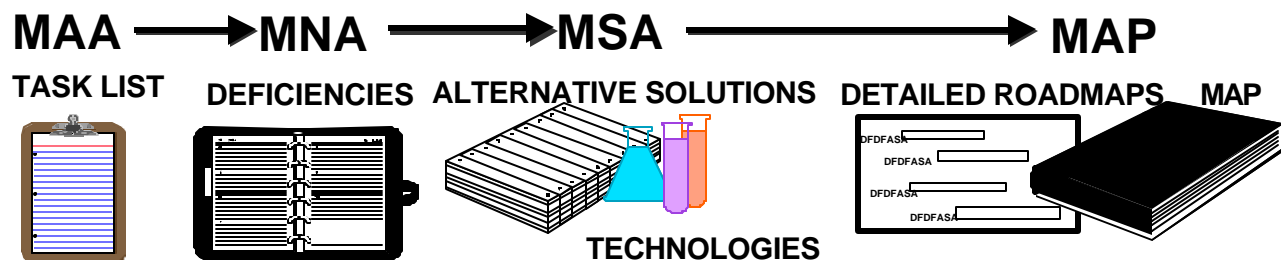
Section 1.5 Mission Area Plan (MAP) / Mission Support Plan (MSP) Process Overview

1.5.1 Purpose

Mission Area Plans and Mission Support Plans serve as a single set of documents to guide three separate, but interrelated systems (Resource Generation System, Acquisition Management System, & PPBS) and to link their outcomes to the nation's security objectives. The MAP/MSP documents Mission Area Assessment required in the Requirements Generation System (RGS) providing program and force justification. Mission area and support plans provide the "big picture" view of Air Force's missions (*operational tasks*) and functions (*backbone tasks*); it is, in essence, the integration and single Air Force viewpoint. MAP/MSP also provide future vision that will influence short-term programming / budgeting activities (*PPBS*). They document current acquisitions and technological opportunities providing continuity of purpose, logical and clear investment strategy.

The MAP/MSP documents the results of the process. MAP provides a focus for limited investment dollars and ensures technologies are developed as quickly as possible. It reflects corrective measures that can be programmed into the POM cycle and/or investigated by civilian industry or DoD laboratories. It also identifies areas in which technology can enhance capabilities, thereby providing laboratories with future program direction and identifies areas for industry to invest in technology innovations. *Figure 3* illustrates the key components of the Mission Area Plan and a simplified view of the MAP process.

Figure 3
Simplified MAP process

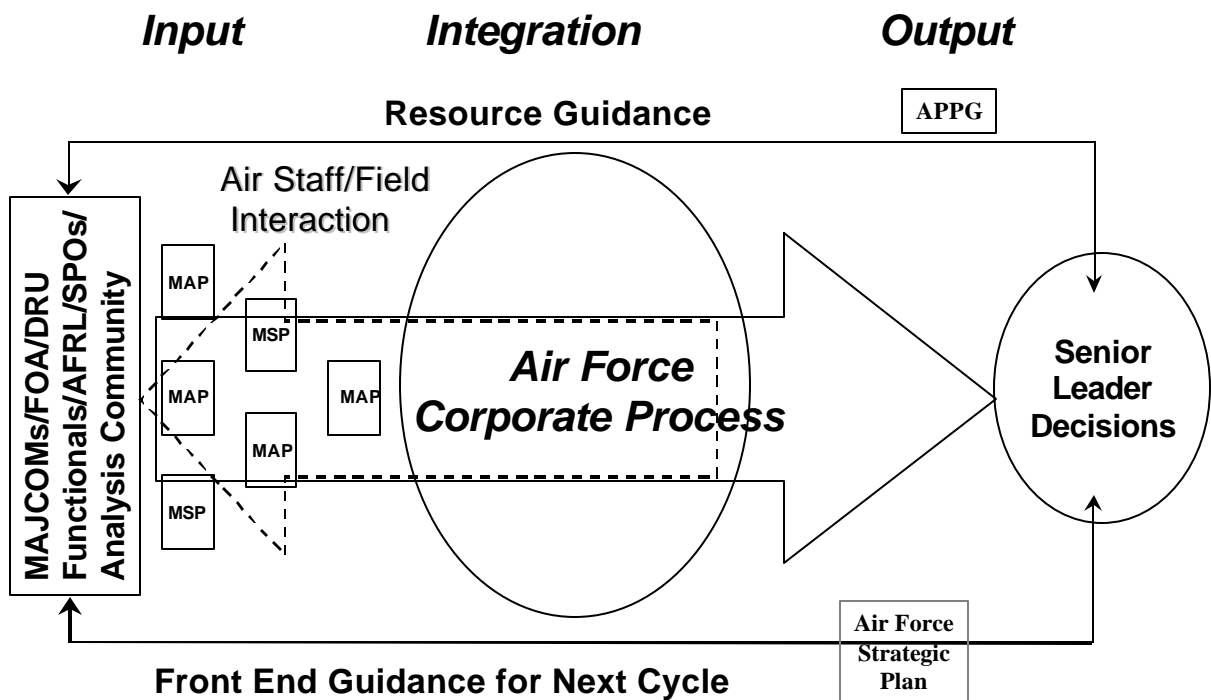


- MAP = MAA, MNA, MSA summary and documentation
- **DEFINES:** Results of MAA/MNA/MSA and the critical enabling technologies and roadmaps needed to resolve deficiencies
- **PRODUCT:** Published Mission Area Plans and developmental "roadmaps"

Figure 4 below illustrates the relationship of the strategic planning to the modernization planning process. It illustrates a dynamic partnership between HQ USAF and the MAJCOMs. Formal guidance is in the form of the Air Force Strategic Planning (AFSP), Air Force Program Projection (AFPP), and Annual Programming and Performance Guide. Interaction between the MAJCOMs and HQ USAF through the corporate process is both formal and informal and results in options for senior leader decisions. The Strategic Planning Directorate, through the AF corporate structure, will review the products of the Modernization Planning Process in order to identify near-term core competency issues (in Vol. 3) for further study and development of options. HQ USAF will also continue to produce the resource-constrained, AFPP. One of its results, resource constraints in mid and long-terms, will be conveyed to the MAJCOMs and functionals as guidance for their modernization plans. As the senior leaders make force-planning decisions, their guidance will be incorporated into the Air Force Strategic Plan's Volume 3, the Air Force Long-Range Planning Guidance. From there, this guidance will flow directly to the MAJCOMs and programmers via the APPG.

Figure 4
Linking Strategic Planning to the MAPs/MSPs

Linking Strategic Planning to the MAPs/MSPs



Chapter 2

Specific Guidance

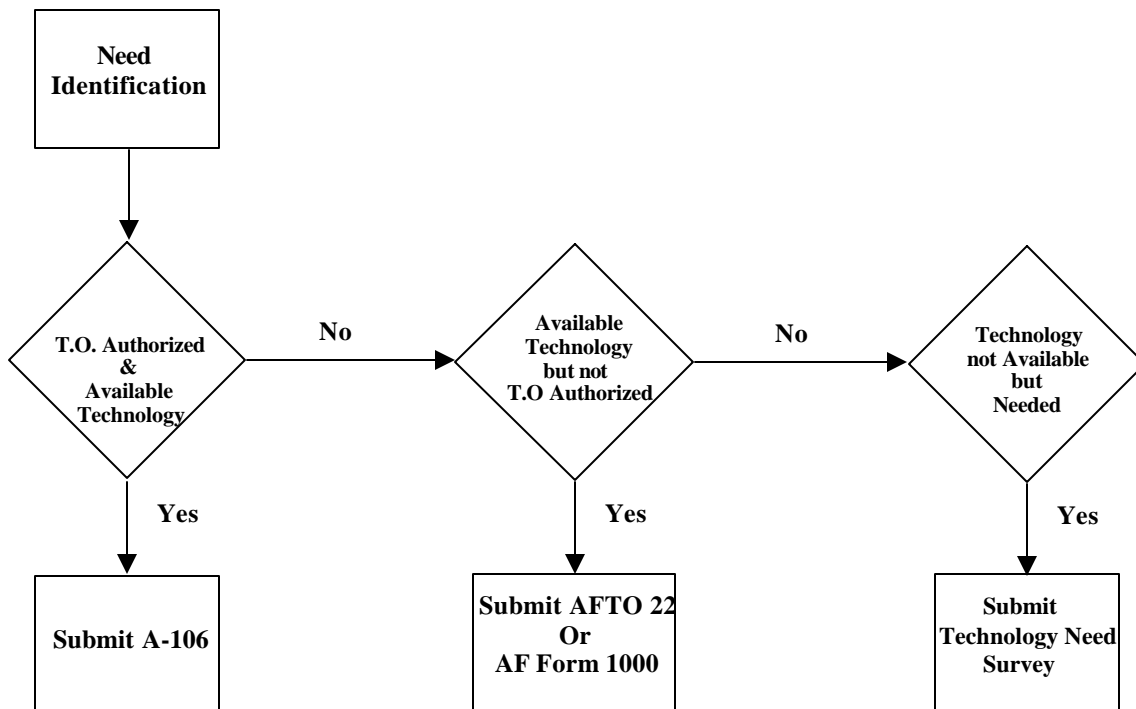
Section 2.1 Technical Need Identification

2.1.1 Overview

- If technology exists and are authorized by technical orders, but requires funding, complete an A-106. See *AETC Shop-Level Pollution Prevention Training Manual* for additional details.
- If technology exists, but is not authorized by technical orders, complete AFTO Form 22. See *AETC Shop-Level Pollution Prevention Training Manual* for additional details.
- If technology does not exist and therefore is not authorized by technical orders, submit a Technology Need Survey (TNS) Questionnaire (atch 1) and sample (atch 2).

2.1.2 Technical Need Identification Flowchart

Figure 5
Technical Need Identification Flowchart



2.1.3 A-106 Summary

2.1.3.1 Purpose

The A-106 is an automated management tool that tracks the status of all environmental projects regardless of funding source. This report is maintained and managed by the Civil Engineering Environmental Shop. The A-106 system can assist the Air Force in obtaining environmental funding for projects.

2.1.3.2 Process

The first thing that should be done is to work through the CE representative to the Hazardous Material Management Process (HMMP) Team or in some cases it may be appropriate to take the project directly to the installation Environmental Flight. They determine whether the project meets the criteria for funding. The Environmental Flight is the focal point for environmental budgeting and all requests for AF environmental funding must go through this office. If the criteria are not met, funding will have to come from another source. If the criteria to obtain AF environmental funds are met, the Environmental Flight will work to find the right “pot” of money to fund the project. At the same time they will also assist in completing the A-106 paperwork. When submitting an A-106 make sure the justification is strong; it may be what sells the project and gets the needed funds. If the project is not programmed into the A-106 system, it will not receive AF environmental funds. The Environmental Flight monitors the status of the projects. After an A-106 project is submitted make sure HQ AETC/LG-EM is aware of the project and receives a copy of the A-106 submission document. LG-EM will validate your project and if approved, advocate and make sure your project is not lost in CE’s priority process.

For more information on the A-106 process, reference the AETC Shop Level Pollution Prevention Training Manual. This manual explains the process in more detail and provides a sample form.

2.1.4 AFTO Form 22/AF Form 1000 Summary

2.1.4.1 Purpose

Many times, innovative ideas will identify a potential change that does not comply with a technical order. The technical orders are designed to protect people, property, and the environment. Do not violate technical orders regardless of the positive impact on accomplishing the mission. Technical Orders can and should be changed when a better way of doing things is identified. The whole process can sometimes be lengthy, but your part is relatively simple to complete. New ideas are identified and implemented by properly completing the required paperwork.

2.1.4.2 Process

The reference for instructions and questions on the AFTO Form 22 is T. O. 00-5-1, and AETC Supplement 1 to that T.O. The following is a brief summary of the process. Step one is to fill out the AFTO Form 22 itself. Once the form is filled out, your supervisor should review it. After your supervisor’s review, take it to go to your respective Quality Assurance (QA) office or equivalent. Your QA will review and send it to the proper office listed in AETC Supplement 1 of T.O. 00-5-1. At this point your part is complete, except to answer any questions the reviewing office may have regarding your request. If the reviewing office approves your change, they will take the required actions to get the change in the T.O. If MAJCOM funds are required for implementation, they may be obtained using existing funds or requested through the A-106 process. Depending on the end-item requiring the change, an AF Form 1067, Modification Proposal may need to be filled out. Additionally, an AF Form 1000

Suggestion Form may be the proper form to use. Samples of both of these are in the AETC Shop-Level Pollution Prevention Training Manual

2.1.5 ESOH Technology Needs Survey

2.1.5.1 Purpose

If technology is not available to meet a specific need or idea that is targeted toward the reduction/elimination of hazardous environments supporting infrastructure or weapons systems, Air Staff/HQ AETC will address and study ways to satisfy this need. This means that a new technology needs to be developed by the scientific community. This is accomplished through the Technology Needs Survey (TNS). It provides an orderly process for the consolidation and identification of needs.

2.1.5.2 Process Overview

The Technology Needs Survey consists of questions for the user to identify a weapon system ESOH technology need. A copy of this survey and a completed sample is provided in Attachments 1 and 2. This survey serves as a validation tool and platform where various needs can be racked and stacked in order of priority.

Every two years a technology needs survey is conducted via the internet and through site visits to gather new requirements from all over the Air Force. Also, the new needs and the updates to the previously submitted needs can be submitted through 311 HSW/XPE website (see paragraph 2.2.2 below). The current process recommends that all needs be incorporated and validated at the base level by the installation Hazardous Material Management Process (HMMP) Team, then, validated and approved by the installation Environmental Protection Committee (EPC). It should then be submitted to the 311 HSW/XPE who, performing as the AF ESOH TPIPT secretariat, in turn will forward to the affected MAJCOM. Routing needs through the MAJCOM allows for cross-functional buy-in at the MAJCOM level. It also allows for the cancellation of processes, which helps streamline the TNS process at the XPE/TPIPT levels. ESOH TPIPT then evaluates all submitted needs and determines which will be worked for that year. It is extremely important that HQ AETC is kept informed if you submit a TNS. The reason being that once the ESOH TPIPT decides to work a need they may need to go to HQ AETC for some funding. The environmental management office within the Directorate of Logistics (HQ AETC/LG-EM) serves as the POC for tracking the status of technology needs submissions. Provide LG-EM a courtesy copy of any TNS that you submit to the ESOH TPIPT.

Section 2.2 Technical Needs Input

2.2.1 Survey

The Technology Need Survey (Attachment 1 and on the internet) consists of 20 questions designed to assist the need submitter to identify ESOH needs and deficiencies. It is critical that all questions be completed as thoroughly as possible for the proper processing of the needs and deficiencies. 311 HSW/XRE POCs are available to assist the need submitters and answer related questions.

2.2.2 Internet Use

The Internet or WWW, in conjunction with limited field visits, will be the primary method for collecting the ESOH needs and deficiencies in the Technology Need Survey and beyond. The TNS is accessible from the 311 HSW/XPE hosted (ESOH TPIPT) web site: <http://xre22.brooks.af.mil/hscxre/xrehome.htm>. 311 HSW/XPE will work with potential need submitters that do not have access to the Internet to assure that their needs are properly entered into the ESOH TPIPT process.

2.2.2.1 Web versus Paper Need Submittals or Changes

The 311 HSW/XPE is planning to receive all new needs and any additional/updated information on previously identified ESOH needs via the on-line survey on the Internet. Some installations may have difficulty in accessing the Internet, and for these units, 311 HSW/XPE will accept paper copies of these submittals. These can be submitted by fax to DSN 240-2069/commercial: 210-536-2069 or email XREWebmaster@brooks.af.mil. The importance of the Technology Needs Survey is getting the needs identified and not how these needs are identified. However, the procedures outlined in this guide will provide for the improved utilization of resources and focus those resources on the better identification of the ESOH needs and solution options for those needs.

2.2.3 MAJCOM and Installation Actions

If multiple POCs are identified within AETC or an installation, AETC/LG-EM will designate the primary installation POC to receive the user-id and password information for the survey. Control of the user-ids and passwords will be determined locally by the AETC and installation POCs. Some POCs may release the control information to enable AETC and installation staffs to input needs freely. Other POCs may choose to centrally control all inputs through the on-line survey system. AETC should notify their installations of the upcoming ESOH Technology Need Survey prior to kick-off letter distribution. The LG/OG coordinators or the functional equivalent are also an excellent source for assisting when processing a technology need application.

2.2.4 Previously Identified Needs

AETC and installation TNS POCs are encouraged to update information on ESOH needs currently in the Technology Need Survey database. Modifications to these needs may also be accomplished through the on-line survey system. Access to these needs will be controlled similarly to the procedures used for adding new needs on-line. The control information will also be provided in the kick-off letter to the appropriate POCs identified to 311 HSW/XRE. The installation POC is the individual or unit/agency that submits the need. Others requiring access to the on-line survey system to update these needs can request user-ids/passwords via email to XREWebmaster@brooks.af.mil. The on-line survey system will not be used to close or withdraw an existing need. Request this type of status change through 311 HSW/XRE. The 311 HSW/XRE will coordinate status changes in accordance with the process established by the ESOH TPIPT.

2.2.5 MAP / MSP / FAP Reviews

During the designated needs collection period, 311 HSW/XPE will accomplish an independent review of available AETC MAPs, MSPs and FAPs. They will identify any ESOH needs and deficiencies which are not submitted through the web-based survey process or in the current database of Environmental, Safety, and Occupational Health needs. Mission Area Plans, which are long term AF planning documents, identify deficiencies in current and future mission capabilities and address cost-effective corrections to

these deficiencies. Functional Area Plans or Mission Support Plans include functional area deficiencies and investments that are unique to the mission area and contribute to operations.

Section 2.3 AETC Validation of ESOH Needs

2.3.1 Need Validation

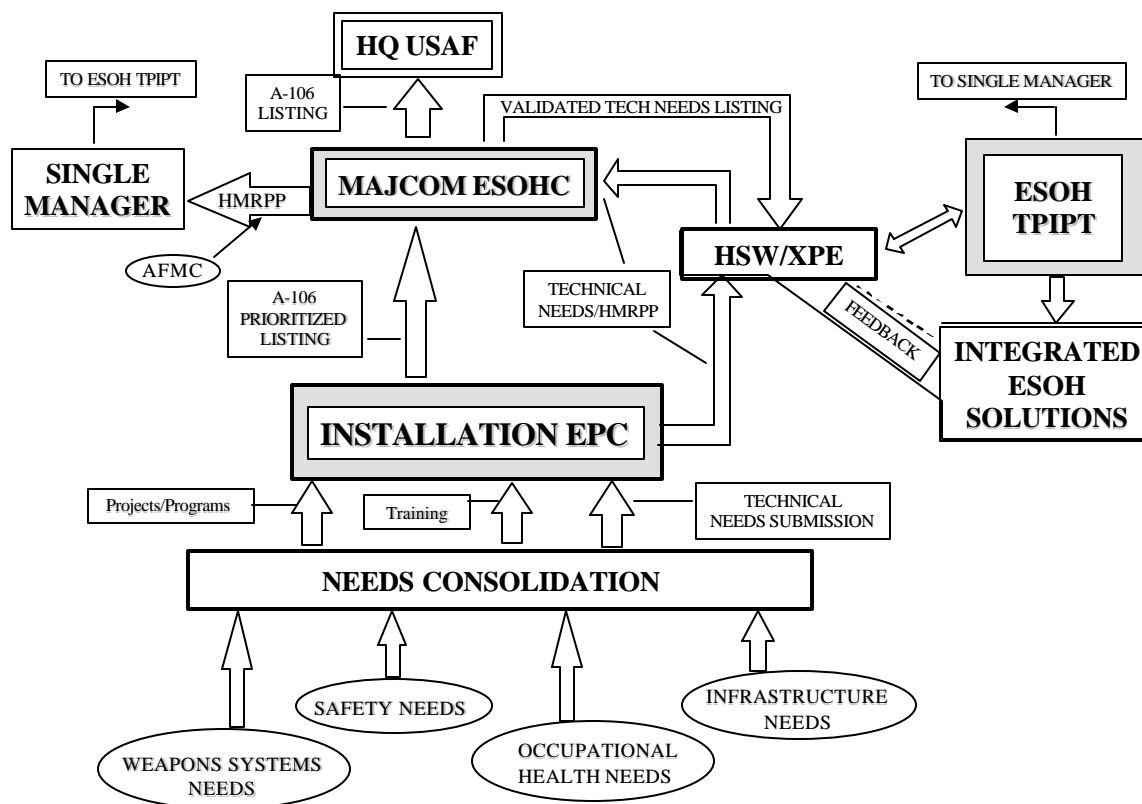
This step is the validation phase of Environmental, Safety, and Occupational Health needs and their associated solutions at HQ AETC. The process obtains cross-functional buy-in and Environmental Safety, and Occupational Health Committee (ESOHC) validation as an AETC ESOH need or deficiency; it will cancel those needs not validated. This builds on AETC's efforts to codify the ESOH TPIPT process from installation through the MAJCOM level.

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2.3.2 Need Validation Process

Need validation follows the technology need inputs. A three-phase process provides a systematic approach to take inputs from the installation functional areas through the MAJCOM through the ESOH TPIPT or Single Manager and into the strategic planning and funding process. *Figure 6* below depicts the technology needs process. It also illustrates how the A-106 fits into the process flow. The following paragraphs will discuss this process in greater detail.

Figure 6
Current Technology Needs Process



2.3.2.1 Validation Process from Functional Inputs through Installation EPC

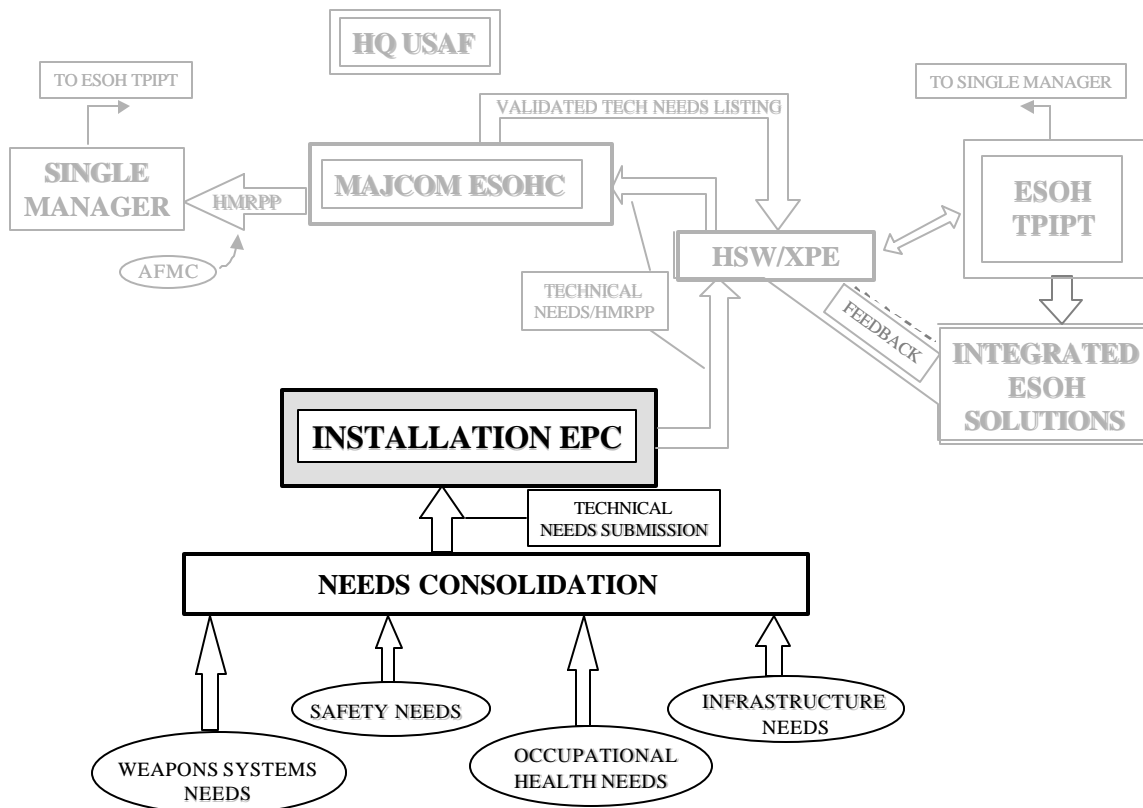
Once the installation functional areas, i.e. weapon systems (LG), safety (SE), occupational health (SG), and infrastructure (CE), submit their respective needs, they are consolidated and forwarded to the installation Hazardous Material Management Program (HMMP). The HMMP team will coordinate efforts to collect the necessary supporting data needed to justify AETC and Air Force funding of the technology needs. This data should represent the installation HMMP team's estimates of the associated costs by specific process, as defined by the T.O. reference or other SM-controlled technical data. If the technology need submission is not valid or requires additional justification information, it is returned to the originator. Valid needs are each ranked using the following seven criteria:

Factors	Percent
Human Hazard Severity	35%
Mission Impairment	29%
Environmental Hazard Severity	14%
Pervasiveness	10%
Cost of Not Fixing	6%
Regulatory Risk	4%
AF Goals / Political Sensitivity	2%

Figure 7 provides a simplified illustration of the process flow.

Figure 7

Technology Needs Process - Functional Inputs thru Installation EPC

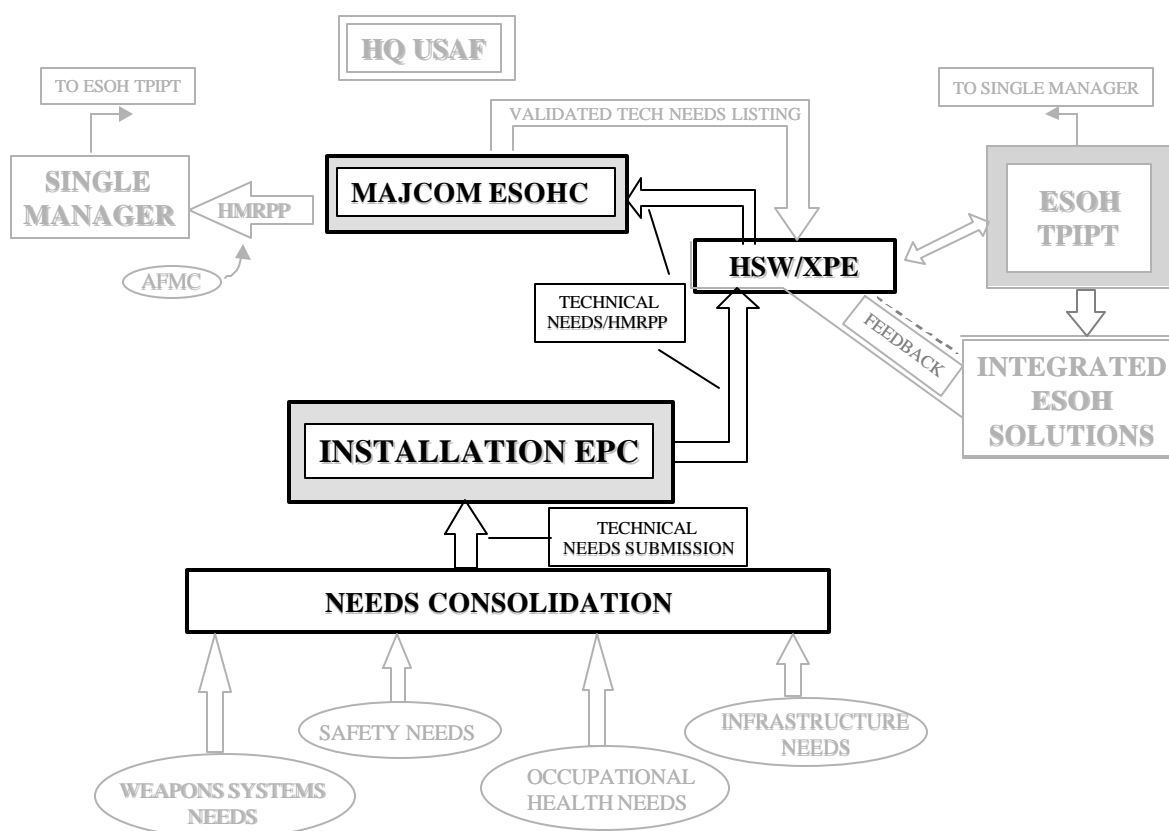


2.3.2.2 Validation Process from Installation EPCs to AETC EPC

After the Hazardous Material Management Process team verifies ranking scores, the needs are validated by the installation Environmental Protection Committee (EPC). The EPC sends the installation's technology needs to the applicable functional area POC at HQ AETC. See Figure 8.

When the installation EPCs send their validated, prioritized technology needs to HQ AETC, a copy of the listing is also sent to 311 HSW/XRE. The HQ AETC HMMP team performs a functional review, compiles, and assesses the list of Technology Needs (TNs) and will coordinate the consolidation of the data command-wide and validate and prioritize the installation inputs for further analysis. The HQ AETC EPC will do a final “racking and stacking” to the TNs. If the need is a valid TN, it is forwarded to 311 HSW/ XRE. If the need is a valid Hazardous Material Reduction Prioritization Process (HMRPP), the need(s) is forwarded to the appropriate Single Manager(s) (SMs).

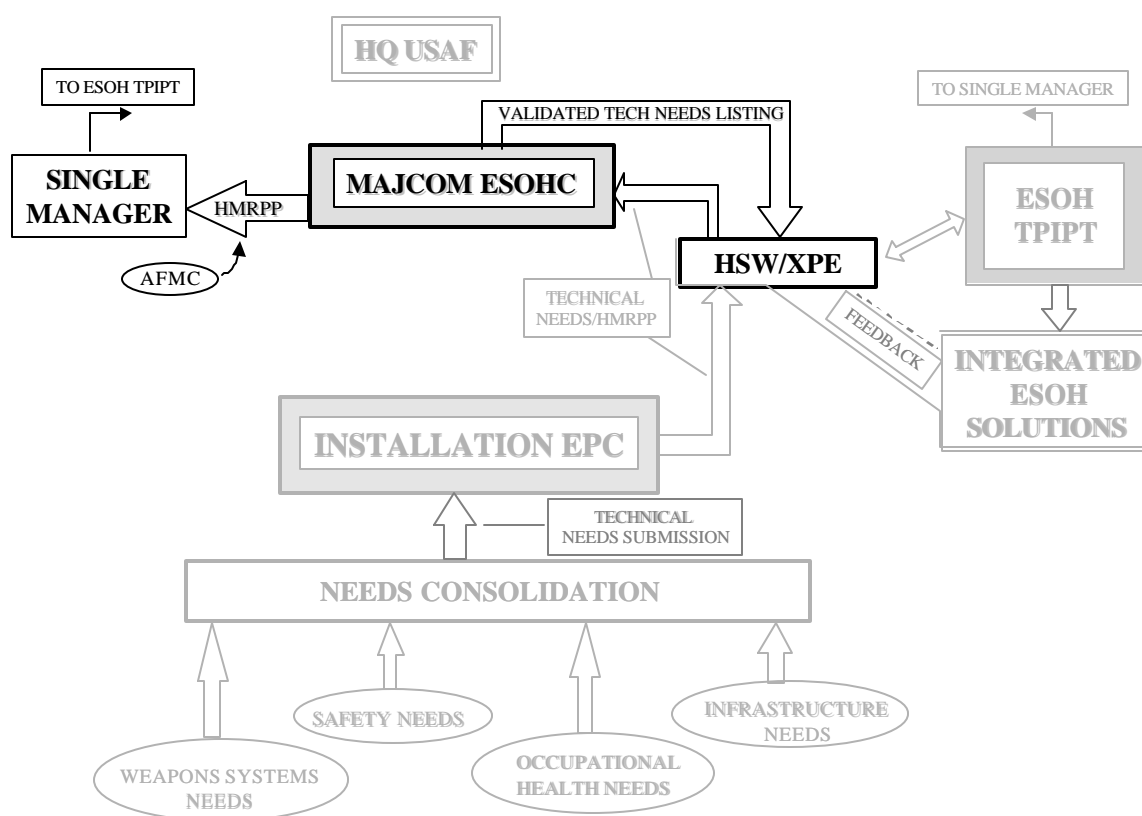
Figure 8
Technology Needs Process – Installation EPCs to AETC ESOHC



2.3.2.3 Validation Process from AETC to Single Managers

If the AETC Environmental Protection Committee determines technology needs are HMRPP, the appropriate (SMs) are identified and the data is sent to them, who in turn, will assess the problem. The SM/AFMC will develop a solution and submit a proposal to HQ AETC. HQ AETC will decide if the solution is acceptable, if it should or can be funded, and whether or not it will be fielded (Figure 10 provides greater detail of the HMRPP process). For those process changes that AETC and HQ USAF ultimately decides not to fund, the SM will include those changes in later system modification projects whenever technically and economically feasible. Process changes for which there are no engineering solutions and new technology development is necessary, SMs identify those technology development needs for candidate processes through the ESOH Technology Needs Survey. Single Managers will update the ESOH TNS on the status of the HMRPP needs for which engineering solution exists. These updates will indicate funding and implementation status. See *Figure 9*.

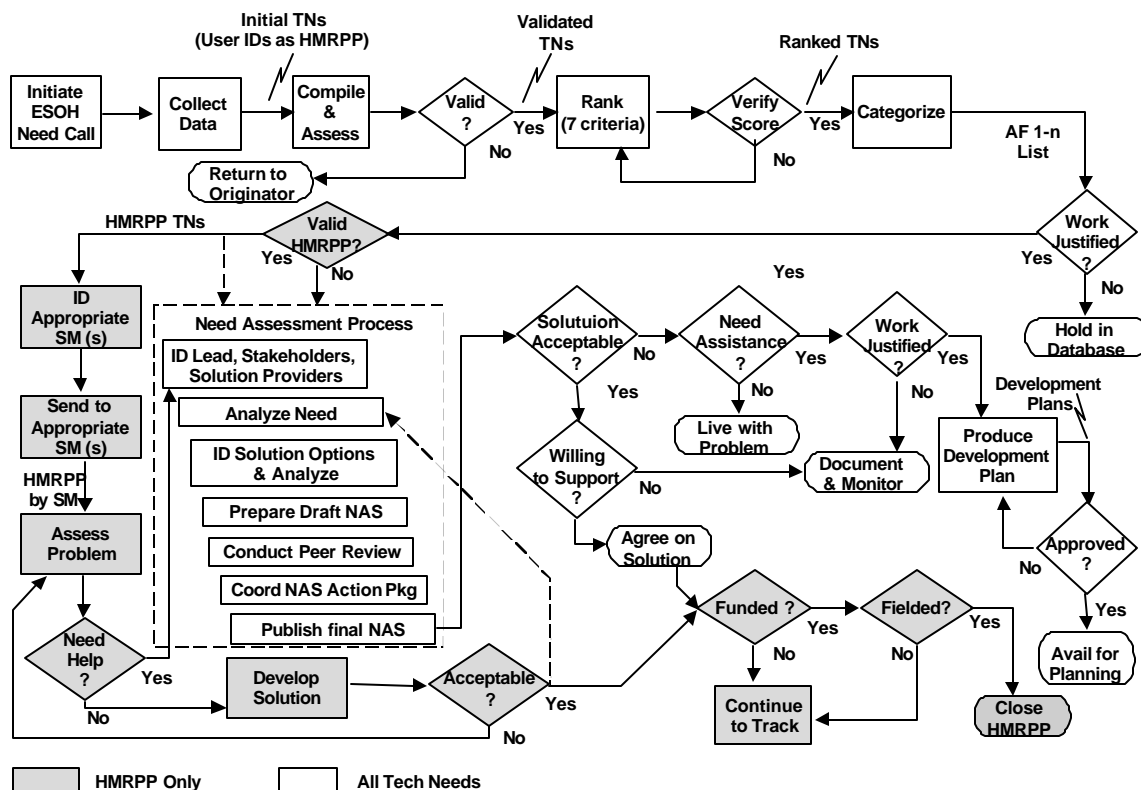
Figure 9
Technology Needs Process – AETC to Single Managers



2.3.2.4 Validation Process and HMRPP Candidate Needs

Needs which are validated by AETC and also identified as potential weapon system Hazardous Materials Reduction Prioritization Process (HMRPP) candidates will be forwarded by 311 HSW/XRE to HQ AFMC/ DRMA. They will work with the appropriate single managers to determine whether the candidates are valid HMRPP needs. HQ AFMC/DRMA will notify 311 HSW/XRE about the validation of candidate HMRPP needs. Validated HMRPP needs will be processed in accordance with AFI 32-7086 and the Weapon System HMRPP Guide, which is available at <http://www.afmc-mil.wpafb.af.mil/HQ-AFMC/DR/wsp2/> or from the link to the DRMA page at the ESOH TPIPT web page at <http://xre22.brooks.af.mil/hscxre/TPIPT/TPIPTinfo.htm>. Once a need is identified as an HMRPP need, it is no longer considered to be an ESOH technology need for TPIPT purposes until the SM requests ESOH TPIPT assistance. Needs which are not validated under HMRPP remain as ESOH technology needs and will be processed in accordance with the ESOH TPIPT Charter as established at the Apr 97 TPIPT meeting. *Figure 10* depicts the HMRPP process flow in relationship to the ESOH TPIPT planning process

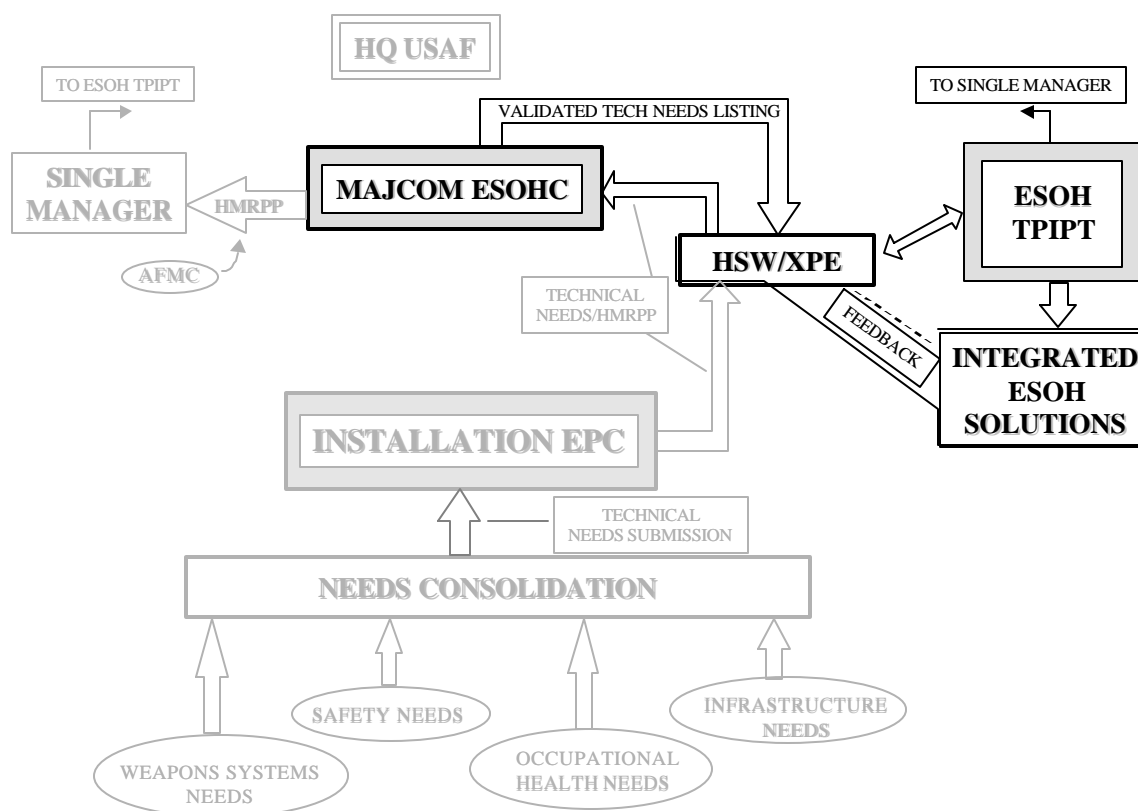
Figure 10
HMRPP Process Flow



2.3.2.5 ESOH TPIPT Validation

When all available information related to a new need has been collected, 311 HSW/XPE will screen the information to determine whether the need is applicable to the ESOH TPIPT process. The 311 HSW/XPE will notify the submitter if the need does not pass the screening and the reason for rejection. For those needs passing the initial screening, 311 HSW/XPE will apply the ranking criteria, calculate the need's priority using the absolute ranking system identified in the following paragraphs below and forward the need via email to the applicable POC for verification and validation. Need ranking, verification and validation does not have to wait until all needs are collected because of the change to the absolute ranking concept. The follow-on processing of some needs may be delayed if more information about the need can be collected during the field visits. AETC/LG-EM will designate POC(s) to receive the needs for validation. Designated POC(s) will notify 311 HSW/XRE (preferably by email) that the need has been validated by the HQ AETC ESOHC or of any other actions required by 311 HSW/XRE. *Figure 11* illustrates the technology needs process from AETC to the 311 HSW/XPE.

Figure 11
Technology Needs Process – AETC to 311 HSW/XPE



Needs identified through TNS will be ranked in accordance with seven criteria (weighting factors for each criterion) established by the ESOH TPIPT:

Factors	Percent
Human Hazard Severity	35%
Mission Impairment	29%
Environmental Hazard Severity	14%
Pervasiveness	10%
Cost of Not Fixing	6%
Regulatory Risk	4%
AF Goals / Political Sensitivity	2%

Under absolute ranking, the priority of the need is determined by the numerical score earned by applying the ranking criteria versus pre-established standards. The ESOH TPIPT approved standards are:

- | | |
|--------------------|-----------------|
| - 0.3500 to 1.0000 | High Priority |
| - 0.2830 to 0.3499 | Medium Priority |
| - 0.0000 to 0.2829 | Low Priority |

The absolute ranking system allows for the continuous real time prioritization and validation of needs without waiting for the completion of the entire TNS cycle. Most importantly to the submitters, validated needs can move much quicker to the next phase of TPIPT process, assessment and solution option identification.

Section 2.4 AETC Cancellation of ESOH Needs

Technology needs that AETC has assessed as not valid or have been withdrawn by the submitter/originator will be canceled.

Section 2.5 Linking ESOH Needs to AETC MAPs / MSPs

2.5.1 Purpose

The key to continued focus on ESOH technology needs is recognition and user buy-in as an AETC technology deficiency. Two vital components of this focus are incorporating needs/solutions into long-range planning guidance and integrating validated needs information into the appropriate Mission Area Plans and/or Mission Support Plans.

2.5.2 Overview

Once the need validation and assessment process is complete, a Need Assessment Summary (NAS) is published. Analysis of ESOH needs and related solution concepts are required to determine where they fit in the Modernization Planning Process (MPP).

- Needs that have short or near term solution(s), i.e. Commercial Off The Shelf (COTS), should be worked through the financial planning and budgeting process and not addressed in either the MAP/MSP
- Needs that have research and development (R&D) solution(s) are candidates for MAP/MSP. This is particularly true for high or medium ranked needs with high mission impact.
- Needs that are cross-cutting, i.e. ESOH issues relating to corrosion control of all airframes, belong in Air Staff MSPs and should be cross-referenced in the HQ AETC MAP/MSP.
- Needs that are AETC specific, i.e. ESOH issue related to T-38 or JPATS aircraft, etc., belong in the AETC MAP/MSP and cross-referenced in Air Staff MSPs

2.5.2.1 Mission Area Plan

Mission Area Plans analyze the mission, define needs and deficiencies, recommend solutions, prioritize tasks, needs, and proposed solutions. MAPs also address major procurement appropriations such as: aircraft and missile procurement, military construction, operation and maintenance finds, and military personnel appropriations at the MAJCOM level.

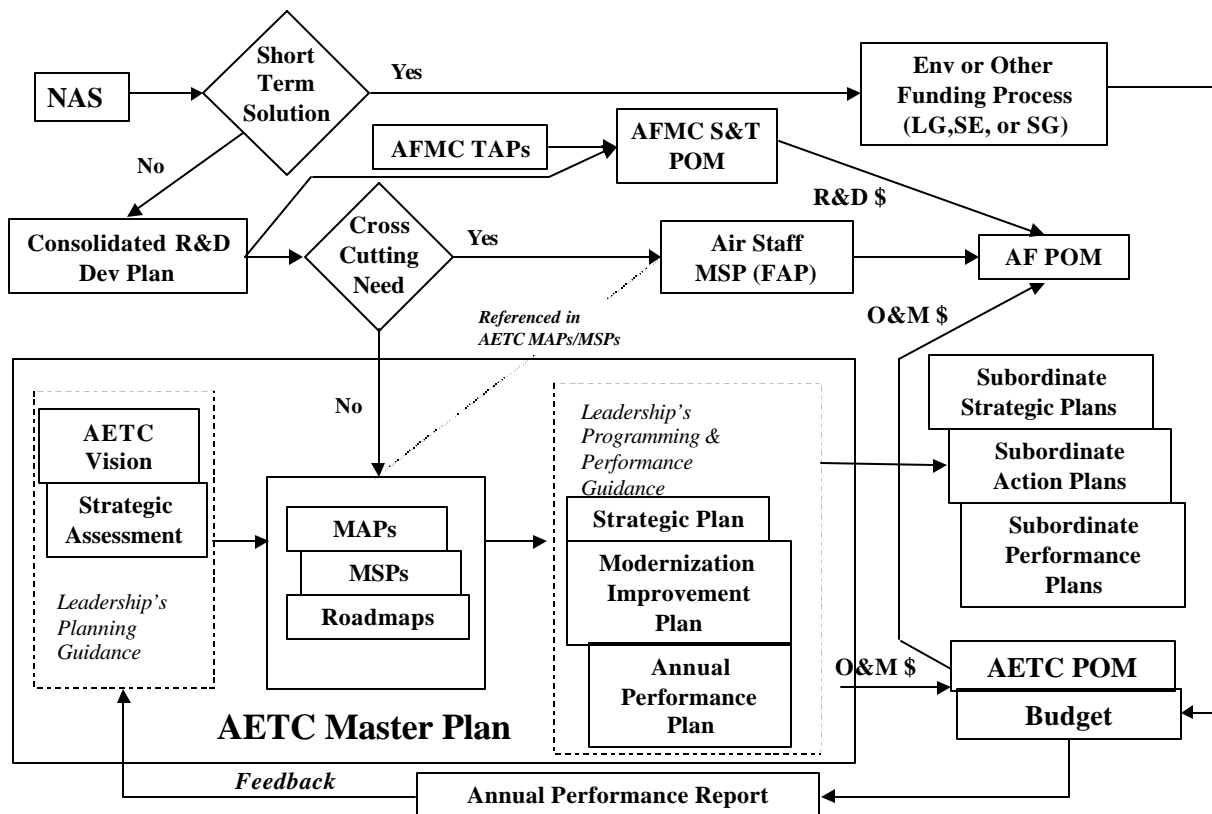
2.5.2.2 Mission Support Plan

Mission Support Plans address major functional area (civil engineering, security, etc.) issues in support of mission areas. MAJCOMs determine production and number of MSPs. Air Force functional managers also produce MSPs that address system investments or leveraging of technologies across multiple MAJCOMs. MAJCOM MAPs/MSPs include references to Air Staff MSPs for applicable issues. *Figure 12* demonstrates the relationship/integration of the process between MAJCOMs (AETC) and SAF.

MAPs and MSPs consist of two formats: a document and a briefing. Both formats described below will reflect the Strategies-to-Tasks (STT) analysis of the Mission Area. They will show the identification of needs and the deficiency corrections recommended. The document, a combination of descriptive paragraphs and diagrams, will summarize the Mission Area, the implementation CONOPs, the deficiencies identified and prioritized corrections. It summarizes the entire Mission Area Planning process for the Mission Teams. The MAP briefings are a concise summary of the MAP. Refer to AFI 10-1401 *Modernization Planning Documentation*, 22 May 1995, for the details on MAP content and how

to format them. The MSP will follow the MAP format and methodology to the extent applicable. That is, MSPs will adapt all elements of the MAP document and briefing, omitting those that do not apply (such as simulation or modeling techniques peculiar to weapon systems). MSPs will expand on other requirements as necessary (for example, statutory and regulatory requirements bearing on functional area tasks). The MSP should reference, but must not duplicate, functional requirements that are particular to a single MAJCOM or mission-area.

Figure 12
NAS / MAP / MSP Flow Chart



AFMC laboratories develop Science & Technology Plans (S&T Plans) linked to research and development requirements identified in Mission Area and Support Plans. TPIPTs act as an interface between AETC and AFMC assisting with the development of MAPs/MSPs and linking these plans and S&T Plans. TPIPT members participate on Mission Area/Support Teams (MATs/MSTs) during the mission area, need, and solution assessment/analysis phases that leads to Mission Area Plans and Mission Support Plans. TPIPTs produce Development Plans (DPs) showing needs/deficiencies, ranked solutions concepts, and research and development requirements (critical enabling technologies).

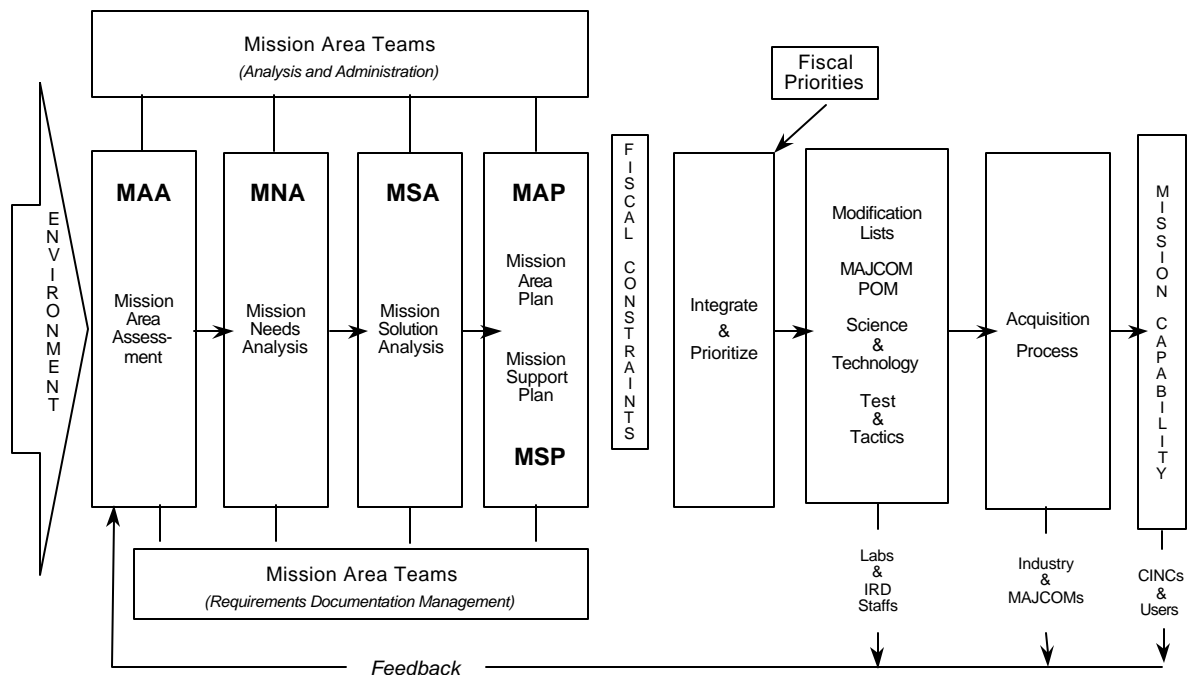
Currently, Air Force emphasis is to closely link the Strategic Planning Process (SPP) and Integrated Planning Process (IPP) with the POM; Air Staff functional areas and MAJCOMs have adopted a similar approach. AETC has established an Integrated Planning Process (IPP) that leads to the AETC Master

Plan. MAPs/MSPs and POM are by-products of this Master Plan. Deficiencies in MAP/MSP provide justification for POM resource support for fixes. Mission Area Plans and Mission Support Plans are part of the Air Force Modernization Planning Process (MPP) as outlined in AFD 10-14 and AFI 10-1401. The MPPs cover a period of 25 years and provides an opportunity to influence the Air Force Program Objective Memorandum (POM).

Roadmaps are developed with MAPs/MSPs and depict change and modernization in time phased chart for systems and technologies

The overview format depicted in *Figure 13* below illustrates the Modernization Planning Process flow and where MAPs/MSPs fit into the process.

Figure 13
Air Force Modernization Planning Process (MPP)



2.5.2.3 The Mission Area Assessment (MAA)

The Mission Area Assessment (MAA) phase kicks off the cycle providing mission area and mission support descriptions and planning framework (assumptions, operational objectives, tasks). The intended outcome is to establish direct linkage of mission/functional activities to National Security/Military Strategy, public policy, customer requirements, and/or “environmental drivers” to serve as supporting rationale for program funding baseline and investment programs. Additionally, it establishes an analytical framework within which to analyze mission/function performance capability and subsequently,

prioritize needs/solutions, and from which to derive measures of performance/merit. The Mission Area Assessment also summarizes and describes the mission/function and defines the current and future environments within which the mission/function is/will be performed. The deliverable product is the Strategies-to-Tasks (STT) hierarchy, environmental analysis and assumptions, a mission/functional description, and a prioritized list of tasks and capabilities. The approximate time required for this phase is four months (Jan—Apr of even years).

2.5.2.4 Mission Need Analysis (MNA)

Mission Need Analysis (MNA) is the next phase leading to current assessment and list of needs. It serves as a starting place for ESOH TPIPT members to begin working with Mission Area/Mission Support Team members to begin matching needs to operational tasks and objectives. Ideally, the ESOH TPIPT representative is a member of MAT/MST. It is best if the Environmental, Safety, and Occupational Health need collection cycle is completed by the start of the MNA cycle. The intended outcome is an understanding and documentation of the deficiencies in capability to perform mission/mission support tasks in support of operational objectives, goals, and strategic direction. ESOH TPIPT using a consensus process selects candidate improvement activities and subsequent technologies/process improvements. The deliverable products are mission/mission support area current assessment and a prioritized list of needs. The approximate time required is four months (May—Aug of even years)

2.5.2.5 Mission Solution Analysis (MSA)

The next phase in the process is Mission Solution Analysis (MSA) which leads to need and solution match-ups, program cost estimates, and identification of critical technologies. ESOH TPIPT members use Need Assessment Summary data for solution input for MAT/MST consideration. They also work a concept call for needs in support of Mission Area Plans/Mission Support Plans. Additionally, ESOH TPIPT works with AFRL and others on Development Plans (DP) for Environmental, Safety, and Occupational Health needs included in MAPs/ MSPs. The intended outcome is a consensus on an affordable “total program” to maintain current mission/mission support capability, to overcome deficiencies in current and future capability through a comprehensive investment program, and to improve capability through selective application of technology. It identifies non-material solutions, required studies, mission needs and potential acquisition programs, science and technology to apply, required key enabling technologies, and potential offset candidates. The deliverable products consist of need/solution descriptions, a prioritized list of solutions, weapon system, technology, and capability roadmaps, force structure diagrams, mission/ mission support baseline, estimated individual and “total program” costs, list of critical enabling technologies, modernization investment plan, AFMC Development Plan, Post-Investment Assessment and a complete status and discussion of each need/solution. The approximate time required is seven months (Sep—Dec of even years, plus Jan—Mar of odd years).

2.5.2.6 Integrated Planning Process (IPP)

Under the Integrated Planning Process (IPP), the follow-on phases after the MAPs/MSPs generate the following plans and reports:

- Modernization Improvement Plan – integrated/prioritized list of investment needs/programs
- Strategic Plan – summary of mission and goals produced in conduction with MAPs/MSPs guide formulation and execution on the budget
- Annual Performance Plan (APP) – measurable goals to be accomplished during the FY
- Annual Performance Report – performance on APP
- Master Plan – summary of all planning documents
- Development Plans (DPs) – annexes to MAPs/MSPs showing details on solution concepts and used to guide S&T planning
- Science & Technology Plans (S&T Plans) – Document AFRL S&T programs in response to AETC needs. Published with AFMC S&T POM and represents technology investment strategy
- Resource Planning Tool (RPT) – Air Force database for programs and solutions planned over the next 25 years that represent Air Force investment strategy

Environmental, Safety, and Occupational Health needs collection relates to the Mission Need Analysis phase of the Modernization Planning Process. ESOH needs are then collated by pillar, type (HMRPP and technology), and technology area. MAJCOM/organization and MAP/MSP needs and deficiencies are grouped by mission area. During MNA phase needs and deficiencies are prioritized similar to ESOH TPIPT prioritization. Although there are provisions for near/short term deficiencies with major mission impact, MAP/MSP needs and deficiencies are generally long-term deficiencies. The Need Assessment Summary process relates to the Mission Solution Analysis phase of MPP and addresses solution concepts for a need. MSA phase looks at TPIPTs and Development Plans for solution concepts for all mission area needs and deficiencies. The Mission Solution Analysis phase typically kicks off with a Concept Call for solution concepts that are then prioritized and ranked in accordance with how well they address all needs/deficiencies.

2.5.3 Roles and Responsibilities

The intent of the Integrated Planning Process is to have one single, integrated AETC planning process that provides the common framework for the Planning, Programming, and Budget System, the Requirements Generation System, and business-process improvement. Its purpose is to *improve responsiveness* in all phases of resource allocation and to *enhance decision-making*. In order to serve as this baseline for programming, budgeting, and improving mission/mission support processes, all planning activities must be centrally managed. This does not mean all AETC plans must be generated or developed by HQ AETC/XP. However, the development of all AETC-level plans should be coordinated with HQ AETC/XPX.

2.5.3.1 HQ AETC/XPX

HQ AETC/XPX is responsible for facilitating AETC senior leadership long-range and modernization planning and managing Modernization Planning Process Mission Area Team (MAT) activities. Planners “nurture” the process, facilitate its conduct, and act as consultants to the managers charged with coordinating the activities of the AETC Board of Directors and AETC Council, when validating planning recommendations. The office provides oversight to all planning efforts to ensure standard practices are met, sufficient information is provided in a timely manner to support the development of Air Force investment strategies and the Resource Planning Tool (RPT), and appropriate guidance is provided to

planners and program managers through MATs. The office manages AETC preparation for, participation in, and results-tracking of Air Staff and other MAJCOM planning processes, summits, MATs, Mission Support Teams (MSTs), and Technical Planning Integrated Product Teams. The office tracks AETC plans, integrates planning activities and information, and maintains contact information on various headquarters planning personnel. The office is responsible for monitoring, determining AETC impacts of, and participating in the development of Air Force planning policy and for developing AETC planning policy. They also identify the necessary knowledge, skills, and tools needed by the staff to successfully plan.

2.5.3.2 Mission Area Teams

AETC has established a Mission Area Team (MAT) for each mission area that includes the required disciplines to develop a MAP. MATs, prescribed by AFD 10–14, *Modernization Planning*, and AFI 10–1401, *Modernization Planning Documentation*, consist of mission and functional experts from across the command at all echelons, AFMC TPIPT representatives, and stakeholders in the mission from outside the command. Each mission area is assigned a MAT, responsible for analyzing the mission; defining needs/deficiencies; recommending solutions; prioritizing mission tasks, needs, and proposed solutions; and writing a Mission Area Plan to document their planning results. A plans and policy (XPX) modernization planner is designated as the MAT chairperson for that mission area and is responsible for training MAT members, reviews and recommendations, briefing and documenting MAT results, coordinating MAT products, and representing MAT concepts and decisions within and outside AETC. Each Mission Area Team should support and receive support from program managers, Mission Support Team leads, and AFMC TPIPT Chiefs. As a minimum, the MAT will: (1) conduct the phases of the MPP, (2) publish a MAP, (3) identify any potential Mission Need Statements (MNS) to be pursued within the current POM cycle, and (4) identify cost impacts and projected force structure roadmaps to programmers.

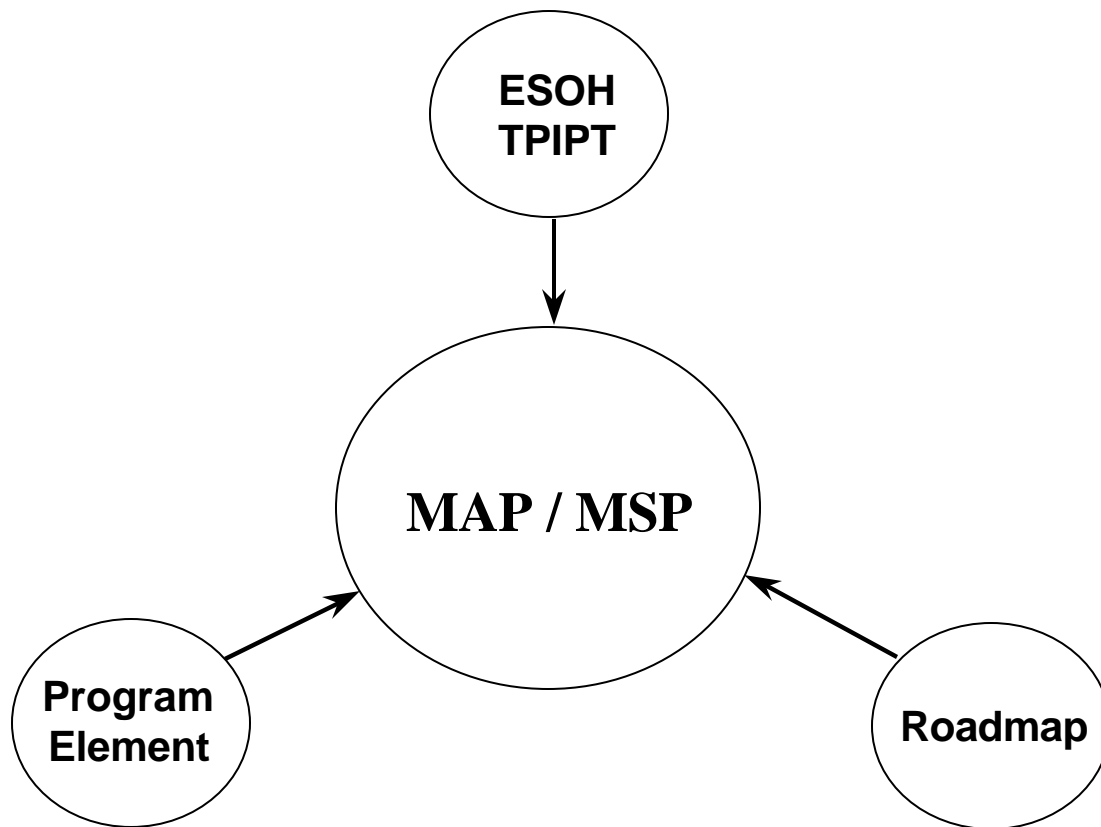
2.5.3.3 Mission Support Teams

Mission Support Teams (MSTs) consist of functional experts from across the command, mission experts, and program managers at all echelons. Each mission support area is assigned a MST, responsible for analyzing the mission support roles and responsibilities, defining needs/deficiencies, recommending solutions, prioritizing support tasks, needs, and proposed solutions, and writing a Mission Support Plan (MSP) to document their planning results. A planner from the functional area (e.g., SC, LG, DP) is designated as the MST chairperson for that mission support area and is responsible for integrating AETC planning activities with their Air Force functional counterpart, MST reviews and recommendations, briefing and documenting MST results, coordinating MST products, and representing MST concepts and decisions within and outside AETC. To accommodate established functional planning activities, MST activities will be tailored to functional area planning requirements. A plans and policy (XPX) modernization planner is designated as the MST facilitator to assist the chairperson, to integrate Mission Support Team and Mission Area Team planning activities, and to train MST members. Each MST should support and receive support from program managers, MAT leads, and appropriate AFMC TPIPT Chiefs. As a minimum, the MST will: (1) coordinate AETC MSP planning activities with their functional counterparts, (2) publish a Mission Support Plan, (3) identify any potential Mission Need Statement or major programs/projects to be pursued within the current POM cycle, and (4) identify cost impacts to programmers.

2.5.4 Application

There are three ways to link technology needs to Mission Area Plans/Mission Support Plans. Since the MAP/MSP is a primary product of the Moderation Planning Process, these three submission methods are a result of the processes versus direct application. *Figure 14* illustrates the three primary sources that feed into AETC MAPs

Figure 14
Linking ESOH Needs to AETC MAPs



2.5.4.1 ESOH TPIPT Process

A new technology need can enter the AETC and Air Staff planning and programming as a result of ESOH TPIPT process. As discussed earlier, Technology Needs are submitted to the functional POCs at the installation level and move through the process as described in section 2.3. Working with ESOH TPIPT, the AETC Environmental, Safety, and Occupational Health Committee will include the technology need as part of the MPP. The AETC Mission Area Team responsible for the need will develop a Mission Area Plan as appropriate IAW AFI 10-1401 *Modernization Planning Document*.

2.5.4.2 HQ AETC/XP Roadmaps

Technology needs can enter the MAP/MSP through existing roadmaps. HQ AETC/XP work with the long-range planning functions of each directorate (i.e. OG, LG, CE, SG, SE, etc.) to develop and validate roadmaps. If a technology need can be incorporated into an existing roadmap, work through the appropriate AETC functional office to have the TN included. If a technology need does not fit into an existing roadmap, a new one will have to be generated. (See attachment 3 for format and guidelines for AETC Master Plan roadmaps) Submit the roadmap application to HQ AETC/XPX. If you have questions regarding a new submission, contact the AETC functional who oversees the area effected by the technology need.

A roadmap depicts change/modernization in a time-phased chart and supporting text to provide a snapshot view of needs in a mission/mission support area. There are several types of roadmaps developed to depict change and/or modernization over the life-cycle of such things as an entire mission area, defense systems, capabilities, or technologies. A Modernization Roadmap outlines a mission area in terms of all assigned force elements over the next 25 years. Weapons System/Capability Roadmaps detail the modernization planned for specific defense systems, functional programs, or capability areas. Individual weapon system roadmaps provide increased levels of detail depicting how technology transitions, modifications, and key software upgrades become incorporated in a weapon system over time. Similarly, capabilities or functional programs, such as Air Technology Network (ATN) or Air, Education, and Training Management System (AETMS) are detailed. For technologies not yet ready for transition to a specific system, but which are projected to provide leverage for the entire mission area, mission area critical/enabling technologies diagrams and descriptions depict development timelines, forecast availability rates, and provide current funding status. The requirement for specific roadmap development is assessed during the MPP process. Roadmaps are published in conjunction with the MAPs/MSPs they support—July of odd years.

2.5.4.3 Program Objective Memorandum (POM)

The third method to include technology needs into the MAP/MSP is through the Program Objective Memorandum (POM). This is achieved by submitting the technology need funding requirement as a POM issue through the appropriate Program Element Manager (PEM). See section 2.7 for a detailed discussion on the budgeting aspect of the process.

Section 2.6 Linking ESOH Needs to USAF MAP(s)

2.6.1 Purpose

After incorporating needs/solutions into long range planning guidance, the next step in the process is to establish the linkage, where applicable, between Environmental, Safety, and Occupational Health needs and Air Force long-range planning documents such as AETC Master Plans, Strategic Plans, Mission Area Plans, Mission Support Plans, and Air Staff functional MSPs. These plans are used to identify deficiencies impacting mission accomplishment and establish integrated priorities for solutions to those deficiencies. Under the Air Force Strategic Planning concept, these plans become the driving force for the POM guidance. The concept is to gain recognition for ESOH needs as MAJCOM deficiencies and, thereby, provide the needed impetus for the resource support of their solutions. The primary goal is to link as many as possible of AETC's ESOH needs to the next revision/publication of the HQ AETC MAPs and MSPs. Additionally, this step involves the linking of ESOH needs from applicable long-range planning documents, such as AETC's MAPs/MSPs, and the Air Force CE Strategic and Logistic Support Plans. This linkage accomplishes two important steps: (1) establishes these ESOH needs as AETC or Air Force deficiencies (part of the Air Force core business); and (2) establishes the funding requirements for the solution concepts to these needs.

2.6.2 Discussion

As previously mentioned, needs that are crosscutting, i.e. an ESOH issue with F-16s, belong in Air Staff MSPs and are cross-referenced in AETC MAPs and MSPs. Air Force functional managers produce MSPs that address system investments or leveraging of technologies across multiple MAJCOMs, Services, or Joint, Defense, and National Agencies. Air Staff MSPs will not duplicate items that should be in a MAP, i.e. the functional would not place a requirement for hardware in their Mission Support Plan if it was already listed as a requirement in the HQ AETC Mission Area Plan. It is imperative that MSP functional deficiencies and investments are directly tied to successful implementation of each MSP. To assist the integration process, MSPs meet the same development timeline used in MAPs.

AETC integrates MAPs and MSPs to provide the fiscal prioritization across the MAJCOM. These integrations must be sufficiently detailed to support Air Force modernization planning through the Biennial Planning, Programming, and Budgeting System (BPPBS). AETC and other MAJCOMs coordinate with supported Commander in Chiefs to prioritize Research, Development, and Acquisition (RD&A) programs to support the MAPs. A committee of senior Air Force leaders reviews the MAJCOM program lists and any associated funding disconnects with fiscal limits that MAJCOMs cannot resolve. The committee reprioritizes programs if necessary and recommends for the Chief of Staff's approval corrections of task deficiencies that meet fiscal constraints.

Refer to *Figure 12* to see the NAS/MAP/MSP process flow and the relationship/integration of the process between MAJCOMs (AETC) and SAF.

Section 2.7 Resource Support for ESOH Technology Needs

2.7.1 Resource Support for ESOH

This step addresses funding support for ESOH needs and solutions through the Planning, Programming, and Budgeting System. This task complements the previous step that looks at the linkage of long-range planning to funding. This step will also look at those ESOH needs and solutions that may not be applicable to strategic plans, Mission Area Plans or Mission Support Plans. Additionally, it covers ESOH needs for which immediate solutions may be available rather than long-range research and development (R&D) systems.

2.7.2 Background

2.7.2.1 Major Formal Budget

The Air Force Programming and Budgeting process includes four main components:

- The Program Objective Memorandum (POM), the Adjusted or Amended POM (APOM)
- The Financial Plan (FINPLAN)
- Execution Year
- The Budget Execution Review (BER)

These processes manage funding resources to meet Air Force goals and objectives. Ineffective and inefficient use of our funding wastes these critical resources. It is imperative that you understand what these process are and what your roles are in each in order to receive the appropriate funding for technology needs.

2.7.2.1.1 Program Objective Memorandum (POM)

The Program Objective Memorandum identifies total program requirements for six years beyond the next fiscal year and includes rationale for planned changes to the Air Force Future Years Defense Program (FYDP). The FYDP is the official document for the DoD. Dynamic and constantly changing, the programming and budgeting process is cyclic without a defined start or end. The POM requires nine months of concentrated effort to construct. In the odd years, the Air Staff will provide each MAJCOM a current repriced Air Force baseline and a MAJCOM specific baseline. The MAJCOM-specific baseline will define which dollars and resources a MAJCOM can program during its POM build. Base and MAJCOM POM adjustments are made based on validated requirements. Requirements of \$1 million or more are first worked through the Financial Plan (FINPLAN) and Budget Execution Review (BER) processes. Program Objective Memorandum submissions get identified in the MAP and the MSP and linked to Air Force directed programs.

Each MAJCOM develops and presents its proposed POM to Air Staff in a single prioritized list with disconnects, initiatives, and offsets ranked based on need.

- A **disconnect** is a requirement that is part of an approved program which has become unexecutable due to insufficient funding, there is a mismatch between resources available and the content approved by the Secretary of the Air Force and Chief of Staff of the Air Force at the conclusion of the POM cycle. Specific Air Force decisions to change the program content on pace in the POM cycle are not candidates for disconnects in the following year's cycle. These decisions represent initial Air Force adjustments to programs and must complete as new content in the initiative phase of the next cycle if restoration of content is desired. All disconnects must be validated by the using MAJCOM.
- An **initiative** is a proposal or requirement for additional funds. The funds would add to an on-going program's content, a proposal for an alternative to a current program or a proposal for a new start.
- **Offsets** are resources identified to "pay" for disconnects, initiatives or corporate bills. MAJCOMs must identify offsets to fund initiatives or adjust program content to meet available resources. Resources may be taken from scaled down programs, canceled programs, lower priority programs, or re-priced programs whose estimates were reduced. Both dollar and personnel resources can be used as offsets depending on Air Staff guidance for a particular POM exercise.
- **Zero balance transfer (ZBT)** is an exact relocation of resources normally within a single program element. A ZBT is a non-programmatic action accomplished to clean up a data base error or realign resources to allow for better management.

2.7.2.1.2 Execution Years

Effective and efficient funds obligation is critical to the planning, programming, and budgeting process. The bottom line is early obligation supports the fight for additional dollars during the year. It is difficult to convince the decision-makers through the corporate process the need for additional funding when there are unobligated environmental still in the system.

2.7.2.1.3 Budget Execution Report (BER)

The Budget Execution Review identifies to Air Staff requirements that are executable but not funded, including environmental, in the current fiscal year. This activity normally occurs twice during the execution year, in March (BER I) and in June (BER II).). Each base submits its top ten unfunded requirements list to HQ AETC/FM. The command's unfunded environmental requirements are collected, reviewed, prioritized, and approved by the MAJCOM ESOHC. The environmental BER is prioritized within the MAJCOM BER and submitted to Air Staff. At the MAJCOM and Air Staff levels, environmental requirements compete with all other O&M requirements for funding.

2.7.3 DISCUSSION

The Program Element (PE) is the building block of funding processes. The PE is a combination of funds for operations, acquisition, supplies, manpower and other resources related to a specific mission capability. Each PE has a Program Element Monitor (PEM) at Air Staff and the MAJCOM who defends

programs and funding requirements. For ESOH needs, several PEMs may be involved (i.e. Environmental, Base Operating Support, Medical, Flying, Operations, etc.).

Environmental requirements within AETC also generally have other review steps before getting to the MAJCOM FINPLAN/BER/POM review and approval steps. These may include base and HQ AETC ESOHC/EPC working groups, teams, subcommittees, boards and committees. Other requirements (non-Environmental) are first reviewed by the applicable staff functional (i.e., DO, LG) before FINPLAN/BER/POM review/approval steps. Requirements are then processed through the established AETC Corporate Structure that typically involves a Panel (Operations, Installation Support, etc.), Group, Board, or Council review with final approval by the Commander.

The Program Element Manager and PE panel will review each funding request. If the submission meets the POM criteria, it will be entered into the funding process at the MAJCOM level. If the panel determines that the request does not fall within the POM period, it can be recommend as a candidate for the MAJCOM MAP or MSP. A Mission Area Team will review any technology need and its funding requirements and include it in the appropriate MAP or MSP.

It is imperative to understand that submitting a request as a Program Element does not guarantee funding even if it meets POM criteria. Currently, AETC will not fund items that are not part of the long-range planning and identified in a roadmap. Another very critical factor in getting technology needs (TN), as well as other requests, funded is validation and advocacy from the highest level possible. At a minimum, this support has to be from the MAJCOM. In recent years, programs requiring significant resources, such as TN research, development and/or implementation, must have full support of Air Staff or greater to be placed high enough on the priority list to receive funding.

Figure 15 outlines the time period relationship of the FINPLAN, BER, and the POM.

Figure 15
FINPLAN/BER/POM Timing

FINPLAN	(next FY)	Oct – Apr
	Bases identify/submit requirements	Oct – Nov
	Validation of requirements	Nov – Feb
	MAJCOM integration of requirements	Feb – Apr
	MAJCOM submittal	Apr
BER	(unfunded current FY)	Dec – Jun
	Bases identify/submit requirements	Nov – Dec
	Validation/consolidation of requirements	Jan – Feb
	MAJCOM BER submittal	Mar
	Revalidation of requirements	Apr – May
	MAJCOM BER submittal	Jun
POM/APOM		Aug – Mar
	Bases/MAJCOM build	Aug – Oct
	Validation	Sep – Dec
	Corporate Review	Jan –Feb
	MAJCOM submittals/briefing	Feb - Mar

2.7.4 SUMMARY

Resource support for acceptable Need Assessment Summaries identified solutions can be obtained through three related processes in the Air Force Planning, Programming, and Budget System. Use the POM for requirements six years out beyond the next Fiscal Year (FY); the Financial Plan (FINPLAN) for the next FY requirements, and the Budget Execution Report (BER) for unfunded requirements in the current fiscal year. Key to getting proper resource funding is to understand what type of funding (Program Element) solution concept qualifies for and to understand any specialized reviewing and validation requirements. The Need Assessment Summary (NAS) solution concept needs to have sufficient cost information to process resource requirements. *Figure 16* shows the basic process for resource support of solution concepts for ESOH needs.

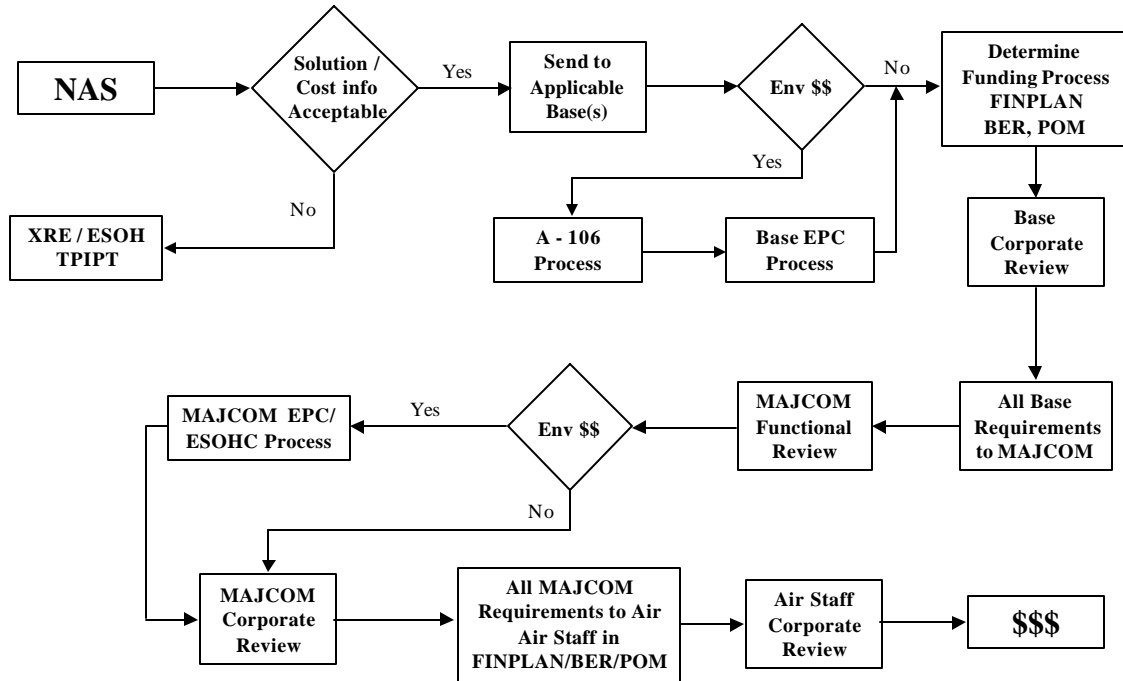
27.4.1 Linking ESOH Need/NAS to FINPLAN/BER/POM

- Analysis of need/solution concept in NAS
 - Identify appropriate PE (i.e. Environmental, Logistics, Operations, etc) and PEM
 - Key is cost information on solution and justification
- Work with appropriate PEM
- Determine appropriate process (FINPLAN, BER, POM)
- Determine validation and staffing requirements for process and applicable PE
- Process through base validation/consolidation functions (usually FM, DO, XP)

Base forwards to AETC for corporate review and processing

Figure 16 below is the NAS resource support flowchart.f

NAS Resource Support Flow Chart



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Appendix

Appendix 1 - Acronyms and Glossary

AETC	Air Education & Training Command, Randolph AFB TX
AETC/LG-EM	Air Education & Training Command Directorate of Logistics Environmental Mgt
AETMS	Air, Education, & Training Management System
AF	Air Force
AF/XP	Air Force Deputy Chief of Staff for Plans and Programs
AFCS	Air Force Corporate Structure
AFI	Air Force Instruction
AFMC	Air Force Materiel Command, Wright-Patterson AFB OH
AFPD	Air Force Policy Directive
AFPP	Air Force Planning and Programming
AFR	Air Force Regulation
AFRL	Air Force Research Laboratory
AFSP	Air Force Strategic Plan
AFTO	Air Force Technical Order
AMS	Acquisition Management System
APOM	Amended Program Objective Memorandum
APP	Annual Performance Plan
APPG	Air Force Planning and Programming Guidance
ATN	Air Technology Network
BER	Budget Execution Review
BES	Budget Estimate Submission
BoD	Board of Directors
BPPBS	Biennial Planning, Programming, and Budgeting System
BR	Budget Review
BY	Budget Year
CE	Directorate of Civil Engineering / Civil Engineering
CINC	Commander-in-Chief
CJCS	Chief, Joint Chiefs of Staff
CONOPS	Concept of Operations
COTS	Commercial Off The Shelf
CSAF	Chief of Staff of the Air Force
DoD	Department of Defense
DP	Development Plan
DPG	Defense Planning Guide
DRU	Direct Reporting Unit
EM	Environmental Manager or Management
EPA	Extended Planning Annex
EPC	Environmental Protection Committee
ESOH	Environmental, Safety, and Occupational Health
ESOH TNS	Environmental, Safety, & Occupational Health Committee Technology Needs Survey
ESOHC	Environmental, Safety, and Occupational Health Committee
FAP	Functional Area Plan
FG	Fiscal Guidance
FINPLAN	Financial Plan
FOA	Field Operating Agency
FY	Fiscal Year
FYDP	Future Years Defense Program

Appendix 1 - Acronyms and Glossary

HAZMAT	Hazardous Material
HMMP	Hazardous Material Management Program
HMRPP	Hazardous Materials Reduction Prioritization Process
HQ AETC/FM	Headquarters Air Education and Training Command Comptroller
HQ AETC/XP	Headquarters Air Education and Training Command Plans and Programs
HQ AETC/XPX	Headquarters Air Education and Training Command Plans and Policies
HQ USAF	Headquarters, United States Air Force, Washington DC
311 HSW/XRE	311 th Human Systems Wing, Directorate of Development Planning
IBR	Investment Budget Review
IL	Deputy Chief of Staff for Installations and Logistics
ILE	Headquarters, United States Air Force Civil Engineering
IPL	Integrated Priority List
IPP	Integrated Planning Process
IPT	Integrated Process Team
JCS	Joint Chiefs of Staff
JPATS	Joint Primary Aircraft Trainer System
LG	Directorate of Logistics / Logistics Group
LRP	Long-range Plan
MAA	Mission Area Assessment
MAJCOM	Major Command
MAP	Mission Area Plan
MAT	Mission Area Team
MNA	Mission Needs Analysis
MNS	Mission Need Statement
MPP	Modernization Planning Process
MSA	Mission Solution Analysis
MSP	Mission Support Plan
MST	Mission Support Team
NAS	Needs Assessment Survey
O&M	Operations and Maintenance
OBR	Operational Budget Review
OCR	Office of Collateral Responsibility
OG	Directorate of Operations / Operations Group
OMB	Office of Management Budget
OPR	Office of Primary Responsibility
OSD	Office of the Secretary of Defense
PB	President's Budget
PE	Program Element
PEC	Program Element Code
PEG	Program Element Group
PEM	Program Element Manager
POC	Point of Contact
POM	Program Objective Memorandum
PP&B	Planning, Programming, and Budgeting
PPBS	Planning, Programming and Budget System
PR	Program Review
R&D	Research and Development
RAP	Resource Allocation Process

Appendix 1 - Acronyms and Glossary

RD&A	Research, Development, and Acquisition
RGS	Resource Generation System
RPT	Resource Planning Tool
S&T	Science and Technology
SAF	Secretary of the Air Force
SAF/FMB	Deputy Assistant Secretary (Budget)
SE	Directorate of Safety / Safety
SECAF	Secretary of the Air Force
SECDEF	Secretary of Defense
SG	Directorate of Surgeon General / Command Surgeon
SM	Single Manager
SP	Strategic Planning
SPO	System Program Office
STT	Strategic-to-Tasks
T.O.	Technical Order
TAPs	Technology Area Plans
TN	Technology Need
TNS	Technology Need Survey
TOA	Total Obligation Authority
TPIPT	Technical Planning Integrated Product Team
USAF	United States Air Force
VTC	Video Teleconferencing
WS	Weapon System
WWW	World Wide Web
XP	Plans and Operations
ZBT	Zero Budget Transfer

Appendix 1 - Acronyms and Glossary

Note: The purpose of this glossary is to help the reader understand the terms used in this publication. It is not intended to encompass all pertinent terms. Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms*, 23 March 1994, and AFM-11-1, *Air Force Glossary of Standardized Terms*, contain standardized terms and definitions for Department of Defense and US Air Force use.

Annual Performance Plan (APP)--The APP sets out measurable goals that define what will be accomplished during a fiscal year, reflecting a level of accomplishment commensurate with the resources requested and subsequently funded and centered on the command's core purpose and its key attributes and characteristics. It is a *single plan* that presents a comprehensive picture of performance across the agency (DoD), with specific direct linkage to the general goals and objectives in its current Strategic Plan and each program activity in its Program and Financing (P&F) schedules in the President's Budget (PB).

Development Plan (DP)---The DP, written by the AFMC TPIPT staff, documents the results of modernization and development planning activities impacting technology planning. It contains in-depth details such as concept descriptions, capabilities, cost, schedule, risk, and technology needs—providing the necessary details to guide further S&T planning. The DP summarizes the mission/mission support area and the processes followed by the TPIPT during Development Planning. Development Plans are published in November of odd years.

Future Years Defense Program (FYDP)—The official document, effective with the Biennial Planning, Programming, and Budgeting System (BPPBS) cycle, that summarizes Secretary of Defense-approved programs for the Department of Defense (DoD). The FYDP projects detailed source requirements for 6 years and force structure for 9 years. During the BPPBS process, the FYDP is updated three times every year to reflect the Services' Program Objective Memorandum, Services' budget estimate submission, and the DoD portion of the President's budget. (AFI 10-601)

Mission Area Assessment (MAA)—A process designed to enhance Air Force warfighting capabilities by identifying military objectives in the Defense Planning Guidance (DPG), the Joint Strategic Capabilities Plan (JSCP), Air Force guidance, and regional Operations Orders and Operations Plans. MAA uses a "strategy-to-task" methodology to identify the operational and support tasks needed to achieve military objectives (AFI 10-601). This product uses simulation and analysis tools to assist in estimating the best use of current forces and capabilities and identifies areas if improved could yield greatest increase in capability. (DoDI 5000.2, Part 4, page 4-B-3) (HQ USAF/XOM)

Mission Area Plan (MAP)---The MAP is the primary product of modernization planning. The MAP covers a period of 25 years and summarizes the results of a designated mission area's MAA, MNA, and MSA. It documents the most cost effective means of correcting task deficiencies or improving capabilities from nonmaterial solutions, changes in force structure, systems modifications, science and technology applications, and new acquisitions. It also functions as the analytical linkage of mission needs to National Security Strategy and policy, providing the basis for justification of the mission area's operational baseline and the funding/acquisition of defense systems. Its format is prescribed in AFI 10-1401, *Modernization Planning Documentation*. MAPs are published in July of odd years.

Mission Deficiency—The inability to accomplish an operational or support task required for the achievement of a military objective. (AFI 10-601)

Appendix 1 - Acronyms and Glossary

Mission Need Analysis (MNA)—A process designed to assess the Air Force's ability to accomplish the tasks identified during Mission Area Assessment (MAA). MNA uses a task-to-need methodology to identify mission needs. MNA can also highlight technological opportunities and identify reliability and maintainability improvements that can also enhance warfighting capabilities. (AFI 10-601) This product uses simulation and analysis tools to assist in identifying plausible operational concepts (alternatives) with potential to improve warfighting performance and roughly estimates amount of improvement in ability to achieve objectives associated with each candidate operational concept. (DoDI 5000.2, Part 4, page 4-E-3) (HQ USAF/XOM)

Mission Need Statement (MNS)—A document prepared to identify a requirement for a materiel solution to satisfy a mission deficiency. (AFI 10-601)

Mission Support Plan (MSP)—The MSP is the primary product of modernization planning. The MSP covers a period of 25 years and summarizes the results of a designated mission support area's planning process. It documents the most cost effective means of correcting task deficiencies from nonmateriel solutions, changes in force structure, systems modifications, science and technology applications, and new acquisitions. It also functions as the analytical linkage of mission support needs to National Security Strategy and policy, providing the basis for justification of the mission support area's operational baseline and the funding/acquisition of supporting defense systems. Its format should mirror that of a MAP as closely as possible. However, the nature of the support area and the types of planning processes and documentation prescribed in publications governing the functional area, will also influence format. The functional area chief, with advice of his/her planners and the XPX staff, will determine appropriate content and format. MSPs are published in July of odd years.

Need—The identification of a mission deficiency satisfied by a materiel or nonmateriel solution. If a materiel solution is envisioned, it is normally documented in a Mission Need Statement (MNS). (AFI 10-601)

Program Objective Memorandum (POM)—A biennial memorandum submitted to the Secretary of Defense (SECDEF) from each Military Department and Defense agency. It proposes total program requirements for the next 6 years. It includes rationale for planned changes from the approved Future Years Defense Program (FYDP) baseline within fiscal guidance issued by the SECDEF. (AFM 11-1)

Requirement—An established need that justifies the timely allocation of resources to achieve a capability to accomplish approved military objectives, missions, or tasks. (AFI 10-601)

Roadmap—A Roadmap depicts change/modernization in a time-phased chart, and supporting text, to provide a snapshot view of needs in a mission/mission support area. There are several types of roadmaps developed to depict change and/or modernization over the life-cycle of such things as an entire mission area, defense systems, capabilities, or technologies. A Modernization Roadmap outlines a mission area in terms of all assigned force elements over the next 25 years. Weapons System/Capability Roadmaps detail the modernization planned for specific defense systems, functional programs, or capability areas. Individual weapon system roadmaps provide increased levels of detail depicting how technology transitions, modifications, and key software upgrades become incorporated in a weapon system over time. Similarly, capabilities or functional programs, such as Air Technology Network (ATN) or Air, Education, and Training Management System (AETMS) are detailed. For technologies not yet ready for transition to a specific system, but which are projected to provide leverage for the entire mission area, mission area critical/enabling technologies diagrams and descriptions depict development timelines, forecast

Appendix 1 - Acronyms and Glossary

availability rates, and provides current funding status. The requirement for specific roadmap development is assessed during the MPP process. Roadmaps are published in conjunction with the MAPs/MSPs they support—July of odd years.

Strategic Plan (SP)—The SP sets out the six-year programmatic, policy, and management goals of an agency (DoD), outlining planned accomplishments and the schedule for their implementation. It contains a comprehensive mission statement; a description of general goals and objectives and how these will be achieved; a description of the relationship between performance goals in the Annual Performance Plan and general goals and objectives in the SP; identification of key factors that could affect achievement of the general goals and objectives; and a description of program evaluations used and a schedule for future evaluations. The AETC SP is a summary presentation of the overall mission and goals of the command, with separate Mission Area and Mission Support Plans to cover all major functions and operations. SPs are updated and revised at least once every three years, IAW the GPRA. AETC's Strategic Plan is developed/revised upon completion of MAPs/MSPs and roadmaps and published in November of odd years.

Strategies-to-tasks—Strategies-to-tasks provides an audit trail from the broadest national objectives and strategies down to operational activities at the tactical engagement level. The framework explicitly disaggregates these activities into key functional elements encompassing the tactics, organizations, and systems that enable the successful execution of missions; it also gives high visibility to the interrelationships among these elements. (RAND Strategies to Tasks study)

Technical Planning Integrated Product Team (TPIPT)—TPIPTs are responsible for identifying and addressing customer technology needs with an optimized and integrated AFMC response. The TPIPT serves as the primary interface between the MAJCOM and AFMC to ensure that the MAP and the related TMP budgets and schedules are fully integrated and mutually supporting. The TPIPTs consist of a team of users, development planners, systems engineers, scientists, logisticians, and test engineers that tap all AFMC organizations and expertise to respond to customer needs. The TPIPT provides support to the Mission Area Planning process during all phases from MAA through development of the MAP.

Weapon System—A combination of one or more weapons with all related equipment, materials, services, personnel, and means of delivery and deployment (if applicable) required for self-sufficiency. (Joint Publication 1-02)

IV IMPACT:

The purpose of this question is to identify the adverse Impact this need has *on*:

War Fighting - the actual flying and fighting mission of the *Air* Force, i.e., Halon fire suppressants have a high impact in this category

Support - everything outside of direct War Fighting is support, i.e. manufacturing, training

(Circle the rating that best describes the impact on one or more of the following areas):

War Fighting:	N/A	LOW	MEDIUM	HIGH
Support:	N/A	LOW	MEDIUM	HIGH

V CURRENT SYSTEM/PROCESS DESCRIPTION (*i.e.* description of chromium electroplating process and operation):

VI EXTENT OF THE PROBLEM (identify affected weapon systems, maintenance activities and operational units):

VII DEFINE LIMITS OF ACCEPTABLE SOLUTIONS (regulatory compliance, reduced costs, reduced releases, reduced toxicity, reduced hazards, improved safety, etc.):

ESOH TNS QUESTIONNAIRE PHASE II

- VIII CUSTOMER(S)/USER(S)** (identify organizations, other than those submitting need, who are directly affected by this need, i.e. weapon systems managers, depot maintenance activities, field level installations, ARMY, NAVY, DOE, etc.):

Organization/Point of Contact:

Office: _____
 Point of Contact _____
 POC Telephone Number (COMM): _____
 POC Telephone Number (DSN): _____
 E-Mail Address: _____
 POC Telephone Number (FAX): _____
 POC Telephone Number (FAX-DSN): _____

- IX DRIVERS** (list regulations, policy, instructions, political drivers, cost, Toxic Release Inventory (TRI), permits etc. that drive this need [refer to Table I] or add as applicable):

- X COMPLIANCE ISSUES** (state whether the lack of resolution has/will cause a noncompliance situation, and provide an estimated cost of compliance):

- XI URGENCY** (when must the need be satisfied):

1996 1997 1998-2000 2001-2005 2006-2010 2011/beyond

- XII AREA OF CONCERN** (soil, water, air, employee exposure, ground safety, etc.):

- XIII HAZMATs USED:** (HAZMATs as listed in EPCRA Section 313 and any other material or concern [Refer to Table II] or add as applicable, provide usage rate and associated purchase costs):

- XIV CURRENT METHOD OF CONTROLLING THE PROBLEM** (identify any current mitigation methods and their associated capital and operational costs):

XV POTENTIAL SOLUTIONS TO TILE PROBLEM (identify any potential solutions and associated capital and operational costs):

XVI STANDARD/SPECIFICATIONS/T.O.s REQUIRED (list applicable federal, military, industrial specifications you must meet):

XVII ENVIRONMENTAL RELEASES (releases as defined by EPCRA Section 313, Include off-site air emissions, waste disposal, treatment and recycling and associated costs):

XVIII TOTAL TANGIBLE PROCESS COSTS (show current costs of existing system/process to include materials, mitigation, disposal, treatment, recycling, labor and energy during a set period of *time*):

XIX KNOWN R&D EFFORTS (identify any known research, development, or acquisition efforts that you are aware of that address your needs, and if possible, provide a point-of-contact):

A. POC

POC: _____
 Organization: _____
 Commercial Number: _____
 DSN Number _____
 E-Mail Address: _____

B. Short Title/Description of Effort If Available:

ESOH TNS “EXAMPLE” QUESTIONNAIRE PHASE I

DATE: 7/22/96

I ONE SENTENCE NEED STATEMENT:

P2/HMRPP:	Non-EPA 17 "drop-in" replacement for Chromium Electroplating for F100 journal bearings
COMPLIANCE: NESHAP	Compliant ventilation system for hard chrome electroplating tanks.
REDEMPTION:	Methods are needed to effectively remove or destroy nonaqueous phase liquid (NM contaminants, such as TCE and PCE (chlorinated solvents) in ground <i>water</i> , or trapped in soil pore spa or rock fractures.
SAFETY:	
OC HEALTH:	

II SUBMITTING ORGANIZATION AND POCs:

A. Air Force Submitting Organization (Program Office) and Point of Contact:

Submitting Organization:	XX-ALCJEM
Submitting POC:	Mr. Tom Smith
POC Telephone Number (COMM):	(xxx) xxx-xxxx
POC Telephone Number (DSN):	xxx-xxxx
E-Mail Address	smitht@emgate.XXXXX.af.mil
POC Telephone Number (FAX):	(xxx) xxx-xxxx
POC Telephone Number (FAX-DSN):	xxx-xxxx
Complete Address	Bldg. 1117. Suite 11, 13 St
City/Base:	XXXXXX Air Force Base
State:	CA
Zip Code:	73069-5000

B. Technical Point of Contact:

Technical Office:	XX-ALC/LPPEP
Technical Point of Contact:	Mr. Jerry Works
POC Telephone Number (COMM):	(xxx) xxx-xxxx
POC Telephone Number (DSN):	xxx-xxxx
E-Mail Address:	worksj @emgateXXXXX.af.rnil
POC Telephone Number (FAX):	(xxx) xxx-xxxx
POC Telephone Number (FAX-DSN):	xxx-xxxx

III NEED DESCRIPTION (provide complete technical description of need):

P2/HMRPP: The bard chrome electroplating process utilized for applying chrome on the journal bearings of the P100 engine is responsible for the generation of 10,000 lbs./yr. of reportable TRI. These are in the form of hazardous wastes that are disposed of off-site, rinse/process wastewater that are treated at the IWTP, and air emissions. Hazards associated with the use of hexavalent chrome are well documented for employee exposure. A non-hazardous process/substitute would reduce long term liability and potentially costs associated with the maintenance of the F100 engine.

Appendix 2 – Attachment 2

COMPLIANCE: Current hard chrome electroplating process will not meet NESHAP for Hard Chrome Electroplating limits of 0.015-mg/dscm chrome being emitted from the ventilation system. In addition the rinse/process waste waters have caused exceedances of the NPDES permit at the IWTP.

REDEMPTION: A nonaqueous phase liquid (NAPL) contaminant is the undissolved liquid phase of a compound, such as trichloroethylene. NAPL contaminants entering the sub-surface may penetrate to significant depths. As NAPL contaminants move through the sub-surface, a portion becomes trapped in soil pore spaces (*or* rock fractures) and a portion may continue to migrate. “Fine phase NAPL” is the migrating portion, which can flow into a well. “Residual NAPL” is that portion trapped in pore spaces by capillary force, which can not generally flow into a well or migrate as a separate phase. In the unsaturated zone (sub-surface zone above the water table), NAPLs may release vapor phase organic contaminants to soil pore spaces and eventually dissolved contaminants to infiltrating waters. In the saturated zone, NAPLs that are less dense than water (i.e., light NAPLs or LNAPLs) will tend to float on the water table while those more dense than water (DNAPLs) sink downward, through the ground water. Current technologies fail to effectively capture contaminants that are adsorbed to soil particles, and these contaminants are slowly released (dissolved) to the ground water. As a result, continuous treatment of ground water may be required for tens to hundreds of years or more.

SAFETY:

OCC HEALTH:

IV IMPACT: The purpose of this question is to identify the adverse impact this need has on:

War Fighting: the actual flying and fighting mission of the Air Force, i.e. Halon fire suppressants have a high impact in this category

Support: everything outside of direct War Fighting is considered support, i.e. manufacturing, training

(Circle the rating that best describes the impact on one or more of the following areas):

War Fighting:	N/A	LOW	MEDIUM	HIGH
Support:	N/A	LOW	MEDIUM	HIGH

V CURRENT SYSTEM/PROCESS DESCRIPTION (i.e., description of chromium electroplating process and operation):

P2/HMRPP: The electrodeposition of chrome takes place by electrically charging the part in a solution of dissociated chromate ions. The solution is made up of 33 oz./gal of CrO₃, and 0.33oz/gal SO₄. The bath is typically used at a temperature of 130 - 140 degrees Fahrenheit. Cathode current density is 0.25-2.5 A/in². Solutions are agitated by air from a distribution system in the bottom of the tank. Anode material is lead-antimony (6%). Anode to cathode ratio is usually 1:1-3:1. Parts size and configuration are varied. The chromium is applied to the F100 journal bearings for various reasons, such as, corrosion protection, build-up of worn parts, wearability and friction reduction as called out by T.O.s.

COMPLIANCE: The ventilation system operates continuously to capture any airborne emissions emanating from the chrome electroplating process. The exhaust is pulled from the surface of the tank and processed through a wet scrubber where the exhaust air passes over a packed bed where water is sprayed over the bed. The water is periodically “blown-down” and ending up at the IWTP for chrome reduction and precipitation in the sludge. The chrome must be precipitated out in order for the wastewater discharge from the IWTP to meet NPDES limits.

REDEMPTION: Two sites have been identified that contain NAPLs. Plumes from these sites are spreading, potentially impacting off-base receptors. Additional sites may have NAPLs as well but existing technology has not been able to establish locations.

SAFETY:

OCC HEALTH:

VI EXTENT OF THE PROBLEM (identify affected weapon systems, maintenance activities and operational units):

P2/HMRPP: F100 engine on the F-15 and F-16 aircraft, Depot maintenance is performed at SA-ALC, Kelly AFB

COMPLIANCE: All plating shops performing hard chrome electroplating will be impacted by the NESHAP for Hard Chrome Electroplating. All Depots perform these operations. It is not known if any other bases perform the operations.

REMEDATION: The United States Environmental Protection Agency estimates that DNAPL compounds may be present at up to 60% of CERCLA National Priorities List (NPL) sites. ("Estimating Potential for Occurrence of DNAPL at Superfund Sites," OSWER Publication 9353.4-O7FS, January 1992). Two sites have been identified at our facility where cleanup will be required.

SAFETY:

OCC HEALTH:

VII DEFINE LIMITS OF ACCEPTABLE SOLUTIONS (regulatory compliance, reduced costs, reduced releases, reduced toxicity, reduced hazards, improved safety, etc.):

P2/HMRPP: Acceptable success would be a replacement for the chromium electroplating bath that uses a non-hazardous alternative for the F100 journal bearings. Ultimate success would be a proven non-hazardous alternative that would exceed the performance properties of chrome and be allowed as a direct substitute for all current hard chrome plating on AF managed systems.

COMPLIANCE: Meet or exceed the 0.015 mg/dscm of chrome entrained in the exhaust air from the plating process as specified in the NESHAP for Hard Chrome Electroplating and the IWTP NPDES limit of IPPB.

REDEMPTION: The method used to remove or destroy the contaminants must be able to reduce TCE and PCE concentrations of 500 ug/l (combined concentration) to 5 ug/l TCE and 5 ug/l PCE at a cost of less than \$0.10/1000 gallons of ground water, or \$0.15/cubic yard of soil.

SAFETY: Reduced or eliminated hazards associated with elevated temperatures and acidity of chrome plating solution.

OCC HEALTH: Maintain ambient air concentrations to chrome below the OSHA - PEL (Permissible Exposure Limit) of .1 mg/m³ local exposure limit is .01 mg/m³ averaged over an 8 hr period and not to exceed .02 mg/m³ for any 15 minute period.

ESOH TNS “EXAMPLE” QUESTIONNAIRE PHASE II

- VIII CUSTOMER(S)/USER(S)** (identify organizations, other than those submitting need, who are directly affected by this need, i.e. weapon systems managers, depot maintenance activities, field level Installations, ARMY, NAVY, DOE, etc.):

A. Organization/Point of Contacts

Office:	xx-xxx/xxxx
Point of Contact:	Mr. T. Known
POC Telephone Number (COMM):	(xxx) xxx-xxxx
POC Telephone Number (DSN):	xxx-xxxx
E-Mail Address:	k~ownt@emgateXX.XXXaf.mil
POC Telephone Number (FAX):	(xxx) xxx-xxxx
POC Telephone Number (FAX-DSN):	xxx-xxxx

- IX DRIVERS** (list regulations, policy, instructions, political drivers, cost, Toxic Release Inventory (TRI), etc. that drive this need (refer to Table I, or add as applicable]):

A. Federal Regulations:

Resource Conservation and Recovery Act
Clean Air Act and Amendments
Clean Water Act of 1977 as amended
Occupational Health and Safety Act
Pollution Prevention Act
Toxic Substances Control Act of 1976 as amended
40 CFC Section 471.02

B. Executive Orders and Other Regulations:

12902 - Energy Efficiency and Water Conservation at Federal Facilities, March 8, 1994
12856 - Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements.
August 3, 1993.

C. DoD Directives:

42 10.15 - Hazardous Materials Pollution Prevention, July 27, 1989.
4165.60 - Solid Waste Management - Collection, Disposal. Resource Recovery and Recycling Program

D. Memoranda:

Deputy Under Secretary of Defense (Environmental Security) Memorandum, Air Force Pollution Prevention Program, January 7, 1993.

E. Air Force Instructions:

32.7080. Pollution Prevention Program

- F. Other:**

COMPLIANCE: State has reduced NPDES limits by an order of magnitude for chromium, for which our electroplating operation is one of the main contributors. New limits can't be met by our treatment system,
REMEDATION: Records of Decisions (RODS) entered into with State and/or Federal regulatory agencies under the requirements of the Comprehensive Emergency Response. Compensation and Liability Act, the Resource Conservation and Recovery Act, and/or other Applicable or Relevant and Appropriate Requirements (ARARs).

SAFETY:

Appendix 2 – Attachment 2

OCCUPATIONAL HEALTH: State has more stringent requirements for worker exposure limits, making it nearly impossible to continue operating old electroplating tanks. State Regulation P-1142L

X COMPLIANCE ISSUES (state whether the lack of resolution has/will cause a noncompliance situation, and provide an estimated cost of compliance):

COMPLIANCE: Current ventilation system will not meet the NESHAP for Hard Chrome Electro-plating that will be in effect June 1998. Capital cost for a compliant ventilation system is approximately \$500,000 with additional operational costs of \$50,000/yr.

REMEDATION: Failure to comply with the conditions of our Record of Decision (ROD) could lead to fines as much as \$25,000/day until we can come into compliance with the ROD; or 375,000/day for repeated failure to maintain conditions as set forth in the ROD.

In addition, the residences surrounding our facility utilize private wells for drinking water. Contamination of the local drinking water supply (aquifer) could result in our incurring the cost to install treatment systems on each household effected, or the construction of a water treatment plant and the installation of water lines to the households effected. It is estimated that the Installation of an individual household water treatment system would cost \$217.00/household/year to operate (assuming 140 gallons/day/capita and 2.5 persons/household). Current ground water modeling projections indicate that by the year 1998, the water supply of approximately 1000 households will be affected. This would result in an annual cost to the Air Force of \$217,000.0/year.

OCCUPATIONAL HEALTH Noncompliance will result due to worker exposure limits in FY96. This will require environmental suits to be worn by worker when working around chromium tanks, and better exhaust systems. Cost is \$3200/worker/year and 3200K for ventilation upgrades.

XI URGENCY (when must the need be satisfied):

<u>1996</u> 1997	1998-2000	2001-2005	2006-2010	2011/beyond
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XII AREA OF CONCERN (soil, water, air, employee exposure, ground safety, etc.):

POLLUTION PREVENTION: Sludge and liquid hazardous waste disposal. use of TRI chemicals in plating process and in wastewater treatment operations.

COMPLIANCE: Airborne emissions and wastewater discharges.

REDEMPTION: Vadoze zone soils and ground water underlying Installation Restoration Program sites

SAFETY: Protection of employee from thermal and chemical burns from solutions.

OCCUPATIONAL HEALTH: Protection of employee from exposure to carcinogens.

XIII HAZMATs USED: (HAZMATs as listed in EPCRA Section 313 and any other materials of concern (Refer to Table U or add as applicable], provide usage rate and associated purchase costs):

Chromium trioxide
10,000 lbs./yr.
\$021/LB

XIV CURRENT METHOD OF CONTROLLING THE PROBLEM (identify any current mitigation methods and their associated capital and operational costs)

P2/HMRPP/COMPLIANCE/OC HEALTH: Chromium electroplating requires the use of a ventilation system with wet scrubbers to control and capture airborne emissions from the chrome plating process. Capital cost of \$250,000 and an operational cost of \$50,000/yr. In addition the rinse/process wastewater from the process require treatment; capital cost of treatment system 3500,000 and operational cost of \$100,000/yr.

Appendix 2 – Attachment 2

REMEDIATION: Currently there are no collection and treatment systems for the identified sites.

SAFETY: Employee requires the use of protective coverall, apron, gloves and face shield, \$2500/yr.

XV POTENTIAL SOLUTIONS TO YOUR PROBLEM (identify any potential solutions and associated capital and operational costs):

P2/HMRPP: Several options to chromium electroplating for our components are in the development stage. Various high-energy particle systems should be available in several years (spray casting is one). Also, there are several bath chemistries that are available for other engineering needs the current bath is designed for (corrosion protection, low friction). Other possibilities are electrodes nickel-phosphorous, and nickel-tungsten-silicon carbide electroplating. A drop in replacement for chromium electroplating is desired.
Costs unknown.

COMPLIANCE: Ventilation systems using HEPA filtration can capture and contain mists emanating from existing hard chrome electroplating baths. These systems in conjunction with fume suppressants can comply with NESHAP for Hard Chrome Electroplating. Capital cost for ventilation system upgrade \$500,000 with operational costs (maintenance, energy, filter changes, disposal, etc.) \$125,000/yr.

REMEDIATION: The most popularly utilized remediation technology for chlorinated organic compounds in ground water is the installation of ground water extraction/injection wells. The ground water is pumped to surface, treated, and then returned to the aquifer. This pump and treat system may be required to be augmented by a contaminant plume containment methods such as: (1) hydraulic gradient control which involves upgradient pumping to create a gradient reversal, (2) installation of sheet piling or slurry walls to physically contain the contaminant plume, and/or (3) trench excavation to capture/treat the contaminant(s). Costs of treatment for TCE and PCB ranges from \$0.20-0.25/1000 gallons for a pump and treat system. This excludes the cost of extraction and reinjection wells, and the capital cost of \$175,000.00 for a 100-gallon/minute treatment system.

OCCUPATIONAL HEALTH:

XVI STANDARDS/SPECIFICATIONS/T.O.s REQUIRED (list applicable federal, military, industrial specifications you must meet):

2/HMRPP:

A. Federal:	Chromium Electroplating Specification	QQ-C-320B
B. Military:	Hard Chrome Plating Specification	MIL-C-23422C
C. Industrial:	Hard Chrome Plating Specification	ASM - 2406F

XVII ENVIRONMENTAL RELEASES (releases as defined by EPCRA Section 313, Include off-site air emissions, waste disposal, treatment and recycling and associated costs):

P2/HMRPP/COMPLIANCE: One 1200 gal tank of electroplating solution has been dumped in the last 10 years. Contaminated rinse water and scrubber water at 4 gals/mm is sent to the industrial waste treatment plant. An additional .5 gal per minute is used for bath make-up water. Two 55-gal drums of sludge are removed during maintenance operations twice yearly.

1200 gal tank solution	\$4.50/gal
4 gals/mm rinse water	\$5.50/1000 gal
55 gal drum sludge	\$25.00/gal

XVIII TOTAL TANGIBLE PROCESS COST (show current cost of existing system/process to include materials, mitigation, disposal, treatment, recycling, labor and energy during a set period of time):

Appendix 2 – Attachment 2

P2/HMRPP/COMPLIANCE:.

Chromium Trioxide	\$ 10,000/yr
Ventilation System Maintenance	\$ 50,000/yr
Plating Bath Disposal	\$ 540/yr
Treatment From Scrubber Blowdown	\$ 10,512/yr
Recycling of Rinse water	\$ 1,500/yr
Labor, 3 PDs	\$100,000/yr
Energy (plating, beating, ventilation)	\$ 75,000/yr

REMEDIATION: Current costs of treatment for TCE and PCE ranges from \$0.20-0.25/1000 gallons for a pump and treat system. This excludes the cost of extraction and reinjection wells, and the capital cost of \$175,000.00 for a 100-gallon/minute treatment system.

SAFETY:

Personnel Protective Equipment	\$ 2,500/yr
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OC HEALTH

Ventilation System Maintenance	\$ 50,000/yr
Energy (ventilation)	\$ 50,000/yr
Annual physical	\$ 150/yr
Workplace survey	\$ 5,000/yr
Personal Protective Equipment	\$ 2,500/yr

XIX KNOWN R&D EFFORTS (identify any known research, development, or acquisition efforts, which you are aware of that address your needs, and if possible, provide a point-of-contact):

A. POC

POC:	Mr. Yyyyyyyy
Organization:	XYZ Laboratory
Commercial Number	(xxx) xxx-xxxx
DSN Number	xxx-xxxx
E-Mail Address:	yyyy@ladoratoryserv.com

B. Short Title/Description of Effort if Available:

P2/HMRPP/COMPLIANCE/SAFETY/OC HEALTH: Proprietary process investigating nickel alloys that have metallurgical performance properties are being pursued by XYZ Laboratory.

REMEDIATION: A Preliminary Design Manual Including Development Specifications for Installation Ground Water Remediation of Dense Solvent Contamination. This program is investigating the possible use of reducing agents to degrade chlorinated solvents. In particular, the effort is focusing on stable and active redox enzymes found in sediments, *and* conditions necessary to promote electron transfer is being explored.

Appendix 2 – Attachment 3

Roadmap Reference Number (assigned by XPX)

Capability Assessment

Equipment			Infrastructure			People		
C	S	M	C	S	M	C	S	M
<i>G</i>	<i>G</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>R</i>	<i>R</i>	<i>Y</i>	<i>G</i>

Program or Process Roadmap

ORIGINATING REQUIREMENT: State the program requirements originating from Mission Need Statements (MNS), Operational Requirement Documents (ORDs) or other taskings.

STRATEGY:

- Based upon AETC's Missions, Goals, and Objectives specify which goal(s) and objective(s) this program directly supports. If the program does not fit a specific objective, specify only the goal. If it does not support a specific goal, specify only the mission area. For example:
- Exploit current and emerging technologies to improve our ability to target and interact with the recruiting marketplace.

MISSION:

- Briefly describe the mission of the program and its value to the Command and/or Air Force

FUNDING DESCRIPTION:

- Identify all PEs that support the program by providing a table of relevant submissions to the latest POM and recognized requirements not yet submitted. On each line name the item, source document if any, dollars requested by fiscal year through the end of the POM submission, and percentage funding approved by year—to FY05.
- For an aircraft program, provide a snapshot chart of the force structure and program mod funding status against fiscal year. For major programs other than aircraft and aircraft modification, provide a similar snapshot of the funding status against fiscal year when appropriate.

PRODUCTION AND MANPOWER:

- Include a summary of the manpower authorizations (officers, enlisted, & civilians) and production (if applicable) by category. Identify the supporting PEs.

DEFICIENCIES & ISSUES:

- Describe specific program or process deficiencies in terms of hardware, software, manpower, funding, programmatics, etc.

PLANS:

- Describe program or process major activities underway and planned.
- Address current or planned corrective actions that focus on the deficiencies described above
 - If no such plans exist, say so
- Include major milestones or provide an implementation schedule/milestone chart

IMPACT:

- Identify impacts to the specific mission supported by the program or process if corrective actions are not accomplished
- Identify significant impacts to other AETC programs or processes due to real or potential problems with this one
 - Describing these impacts across programs and processes allows us to begin assessing dependencies within the entire AETC execution plan

Appendix 2 – Attachment 3
Roadmap Reference Number (assigned by XPX)

CAPABILITY ASSESSMENT:

- Provide “stoplight” evaluation of the system’s capability in three assessment areas, across three timeframes.
 - This capability assessment should have a very strong tie to the deficiencies described above
- The assessment areas are Equipment, Infrastructure, and People
- The timeframes are **C**urrent (FY 99), **S**hort (FY 00-05), and **M**edium (06-14)
- Color code (letters G, Y, or R) the capability assessment block at the top of this template to indicate capability
- Use the following criteria to evaluate capability
 - **Green** – Program or process objective obtainable. Milestones on track. Minor or no deficiencies. Corrective actions identified and underway, or executable, for minor deficiencies. Program fully funded and/or required resources available
 - **Yellow** – Program or process objective in jeopardy. Insufficient information available for program/capability assessment. Milestone schedule slipping or likely to slip and/or maintaining schedule requires high-risk workarounds. Minor to moderate deficiencies. Corrective actions not identified or not executable for deficiencies. Program not fully funded and/or required resources limited
 - **Red** – Program or process objective not obtainable as structured. Significant schedule slippage. Moderate to significant deficiencies. Program unfunded and/or required resources not available
- Explain what factor or factors led to a yellow or red capability assessment.

Format and guidelines for AETC Master Plan Roadmaps

Assume the audience is familiar with only the most common acronyms (e.g., TDY, POM, and FY). Follow the format above. Use specific and concise wording so the roadmap will fit on one two-sided page with at least half-inch margins.

OPR: *OFFICE SYMBOL*
As of: *MM YY*

SAMPLE

Weapon System Environmental Roadmap

STRATEGY: Reduce exposure to environment hazards

MISSION: Minimize Use of Hazardous Materials and Pollutants in equipment acquisition, modification and maintenance programs

DESCRIPTION:

- SECAF/CSAF has established objectives for pollution prevention, hazardous and solid waste reduction, reduced use of ozone depleting chemicals, increased recycling, etc
- AF/IL has established a specific goal to provide timely and responsive support to warfighters and other customers. A specific objective under this goal is to reduce exposure to environmental hazards

DEFICIENCIES:

- The F-16 EPU employs a hazardous material as a propellant
- Hydrazine is a toxic at low levels and is suspected to be a carcinogen and mutagen
- Strict handling procedures are required with special requirements for cleanup of the reaction products and spills from hydrazine
- Most activities require full protective gear to be worn by personnel
- Results in lengthy, cumbersome and costly procedures for manufacturers and field units
- Storage facilities alone are in excess of \$250,000
- More regulatory requirements are anticipated for the use and exposure to hydrazine

PLAN:

- AFRL has been researching replacements for hydrazine
 - A monopropellant replacement has been successfully identified in the exploratory research effort
 - Additional efforts have been suspended by AFRL pending the results of NASA research
- NASA is researching the feasibility of a retrofit system using the replacement monopropellant. Efforts are scheduled for completion in early 1999
- Monitor the results of NASA R&D for retrofit system
- Emphasize the importance of this R&D to AETC mission

BOTTOM LINE IMPACT:

- Lack of suitable replacement for hydrazine could impact fighter and instructor training
- Continued use of hydrazine increases operating costs for F-16 operations
- Continued use of hydrazine exposes personnel to potential environmental hazards
- Discontinuing R&D efforts for a hydrazine replacement is inconsistent with current Air Force goals and objectives

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Appendix 3– Reference Documents

AFI 10-1401	Modernization Planning Documentation, May 1995
AFI 16-501	Control and Documentation of Air Force Program, December 1997
AFI 32-7001	Environmental Budgeting, May 1994
AFI 32-7086	Hazardous Material Management, August 1997
AFPD 10-14	Modernization Planning, March 1995
AFPD 16-5	Planning, Programming, and Budget System, July 1994
AETC 16-501	Corporate Structure, and AETC Environmental PPB Execution Handbook
T.O. 00-5-1	AF Technical Order System. August 1999
T.O. 00-5-1/Supp 1	AF Technical Order System, AETC Supplement 1 August 1999
	FY98 Technology Needs Survey Plan, 25 June 1998
	AETC Planning Concept of Operations, February 1998
	AETC Shop-Level Pollution Prevention Training Manual, September 1996
	AETC Logistics Group Environmental Coordinator Guide February 2000